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BURLEY TOBACCO AND THE CHANGING STRUCTURE OF AGRICULTURE IN A GREEK VILLAGE

By

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A DISSERTATION

Submitted to
Michigan State University
in partial fulfillment of the requirements
for the degree of

DOCTOR OF PHILOSOPHY

Department of Sociology

1985

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ABSTRACT

BURLEY TOBACCO AND THE CHANGING STRUCTURE OF AGRICULTURE IN A GREEK VILLAGE

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This study explores the impacts of the introduction of burley tobacco on the structure of agriculture in a Greek village and the new economic and social relationships that have emerged. The analysis focused on the factors of production (land, capital, labor and management), the system of farming, the patterns of social stratification within the agricultural community, and the norms of local cooperation.

Data were derived from the 1981 agricultural census, production cost surveys, village statistical reports and through focused interviews and quasi-participant observation.

The impacts of burley tobacco on the local community can be traced to the specific characteristics of the new crop. Burley tobacco: has to be rotated every other year with other crops; places a high demand on capital; offers very high returns to both land and labor; and requires substantial technical and managerial skills on the part of the farmer.

With available hired labor and with the high returns of tobacco to land and labor, some farmers expanded their scale of operation to such a level that their own family labor consists of only a small part of the total labor required.

These operations, are called by local people "farm businesses" and their operators "businessmen" as opposed to "farming" and "farmers".

My analysis revealed that operations run by "farm businessmen" and by "farmers" differ substantially in a number of ways. "Farm businessmen" own two times more land and operate a total of five times more land than do "farmers". In addition, "farm businessmen" own a larger number of high-powered tractors, plant most of their land on tobacco and corn and their family members work almost exclusively on the family farm.

With the tremendous expansion of tobacco during the last three years, production has been pushed to less fertile soils with inadequate irrigation. In this race to acquire land, ever of lower fertility, with inadequate irrigation, far from the village, and at ever higher rents and wages for labor, small farmers are becoming less competitive vis-à-vis the larger farmers.

Prospects for cooperation among farmers have also declined and entry into farming has become extremely difficult for aspiring young people. The supportive network of helping obligations and expectations is replaced by an agrarian economy based on a monetary calculus of time and energy. The village agriculture once characterized by equity and an egalitarian ethos is transformed into a bifurcated agricultural structure dominated by the large tobacco operations.

To my daughter, **ANASTASIA**
"the girl of my life"

as a reply to her question asked at the airport
every time I had to leave Greece
"Dad, why are you always leaving?"

and to my parents, **KALLIOPE** and **ARGYRIOS**
for their unlimited moral and financial support
during my studies at MSU

AKNOWLEDGEMENTS

I would like to express my sincere thanks to the numerous people who assisted, advised, and encouraged me in doing this study.

Firstly, I especially wish to express my deep appreciation to Professor Loukas Ananikas, Aristotelian University of Thessaloniki, Greece, who encouraged me to pursue graduate studies at Michigan State University and gave me strong support throughout my graduate student career.

I would also like to express my deep appreciation to Drs J. Allan Beegle, Harry K. Scharzweller, Craig K. Harris, and Jay W. Artis, who served as members of my guidance committee. Their critical examination of the dissertation and valuable comments and suggestions played a significant role in improving the quality of this study. I especially wish to aknowledge Dr Harry K. Schwarzweller and Dr J. Allan Beegle for their invaluable assistance and constructive (sometimes extremely challenging) criticism.

My gratitude also extends to the many persons and organizations who consented to being interviewed or to sharing documents I especially wish to aknowledge the help I received from the National Statistical Service of Greece. Its permission to give me access to the 1981 agricultural census of the village helped me immeasurably.

I am also deeply indebted to the people of Agios Loukas who took time from their busy schedules to be interviewed. I

feel a special gratitude to Mrs Vassiliki Angelidaki and to my neighbors in Agios Loukas who provided me with hospitality and care throughout my fieldwork. I hope I have not betrayed their trust. Any inaccuracies in my portrayal of their struggle are unintended and represent my inadequate understanding.

A special appreciation is expressed to my fellow student Virginia Dawson for her valuable assistance in proofreading this manuscript. Dr Harry K. Schwarzweller has also helped me a lot in editing the first draft and clarifying some of the terms used. If the present study is a readable one, I owe it to their fine editing.

I am also deeply grateful to my parents, Argyrios and Kalliope Daoutopoulos. for their unlimited moral and financial support during my studies at MSU. In addition, their respect among the people of Agios Loukas made my research a lot easier. Without their help, in line with the traditional Greek familial support, I would have not been able to complete my studies. I also wish to thank my brother Gregory for providing valuable help in data analysis over many afternoons and weekends.

I am also grateful to two other members of my extended family who live in this country. Elli Alex and Jim Dimitris and their families provided me with warm hospitality and helped me to adjust to the new culture during several breaks They even encouraged me to consider seriously a permanent residence in America. I appreciate that, but for many reasons I will return to my homeland; there is much to

do.

Finally, I would like to apologize to my daughter ANASTASIA, caught in the middle of a family tragedy and deprived of my love and affection during the three-year studies at MSU. I hope you someday understand the reasons for my spiritual Odyssey to this country "agapi mou" (my love) and justify the sacrifies you had to make.

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1. Introductory Statement

Since World War II major changes have taken place throughout the world and especially within the "developing" countries. Through better communication, previously isolated rural areas have come into closer contact with urban centers. As population pressure upon land steadily increased and as rural people gradually adopted values and patterns of behavior characteristic of urban culture, the rural economy too was pressed to become more efficient and more productive.

Greek agriculture too, during this period experienced major changes as new technology was replacing traditional practices. The development path chosen by Greece was similar to that followed by many other countries, that is, increasing the level of inputs. The use of chemical fertilizers. insecticides, pesticides, new high yielding varieties, more machinery and new farming practices expanded tremendously.

Subsistence farming declined as a result of increased requirements on the part of individual farmers to produce greater surpluses for the purchase of the necessary production inputs from the industrial sector. Asa result, farming communities were increasingly incorporated into and made more dependent upon the national and international markets. During the 60s, particularly in the plains area, production for market had become the main goal of most

farmers and, in general, substantial specialization was taking place. Today one observes that certain regions of the country are almost exclusively occupied with the production of certain commodities; tree fruits and especially peaches, mainly for the European markets. are produced in the triangle of Skydra, Naoussa, and Veria, in Northern Greece; wheat and other grains in Thessaly; early season vegetables (tomatoes and cucumbers) on the island of Crete; etc.

Despite increased specialization several competing crop production systems exist within every agricultural region. Each system requires a somewhat different combination of the major factors of production (land, capital, labor, and management); different commitments on the part of the farmer, in terms of initial investments and time requirements (annual-perennial crops); a different level of technology; and a different marketing network. Each system too is differentially reinforced by existing agricultural policies and each system provides farmers with different returns on their investments.

Because of the particular characteristics a given crop can discourage some farmers from including it in their production system while encouraging others to adopt it and even to expand their scale of operation. As Eric Wolf (1956:58) states: "crops with different characteristics make different kinds of demands on the people who grow them". As a result, access over scarce resources such as land and credit is increasingly favoring those who have adopted the particular crop. This process further leads to accumulation

of capital and increased social inequality in terms of wealth and control over scarce resources. Finally, new social and economic patterns of behavior begin to emerge.

2. Purpose and Objectives of the Research

The present study was undertaken with the aim to explore the major changes brought about in the structure of agriculture of a Greek farming community during the postwar era and especially following the introduction of a new crop (burley tobacco), which is highly intensive in terms of both labor and capital resources.

The main concern is to determine how the new crop affected a reorganization of the factors of production (land, capital, labor and management), the system of farming, the patterns of social stratification within the farming community, and the processes of cooperation and conflict within the village. In this study, I hope to show:

How equity in access to production factors have been altered by the new crop and have been replaced by an emerging bifurcated farm structure dominated by large scale tobacco operations.

How the equalitarian ethos in the village has been replaced by a highly competitive atmosphere bringing clouds of conflict between small and large farmers competing against each other in getting access over limited resources (land, labor, and capital).

How the increased prosperity brought new economic and social patterns of behavior.

3. The Setting

3.1 Geography and Ecology

Thevillageof Agios Loukas (Saint Luke) is located in the north-western part of the valley of Yiannitsa (Figure2). A paved road to the south connects the village with the market town of Kria Vrissi (5,521 inhabitants in 1981). From Kria Vrissi, rural roads provide easy transportation to the towns of Alexandria and Veria (Department of Imathia). Thessaloniki, the second largest city of Greece, is only an hour's distance from the village (60.5 kilometers). To the North of Agios Loukas the road from Kria Vrissi, after passing the village of Galatades, reaches the provincial highway connecting Edessa (Capital of the Department) with the town of Yiannitsa.

Some village people, now in their seventies lived through an enormous change in the environment and the ecology of this village and the nearby valley of Yiannitsa. Prior to the 1935 the area northeast of the village was a large swamp. A river bringing water from the mountains and the valley of Almopia to the lake of Yiannitsa (see Figure 3) divided into two smaller rivers just outside the settlement. Because the river-beds were constantly changing due to silt deposits, the life of the people was under continuous threat, especially during the raining season. But transportation to nearby villages was possible by small boats without keel, called "plaves", as well as by horseback along the paths and wagon trails.

In those days floods were very common and only in late

Figure 1. Map of Greece

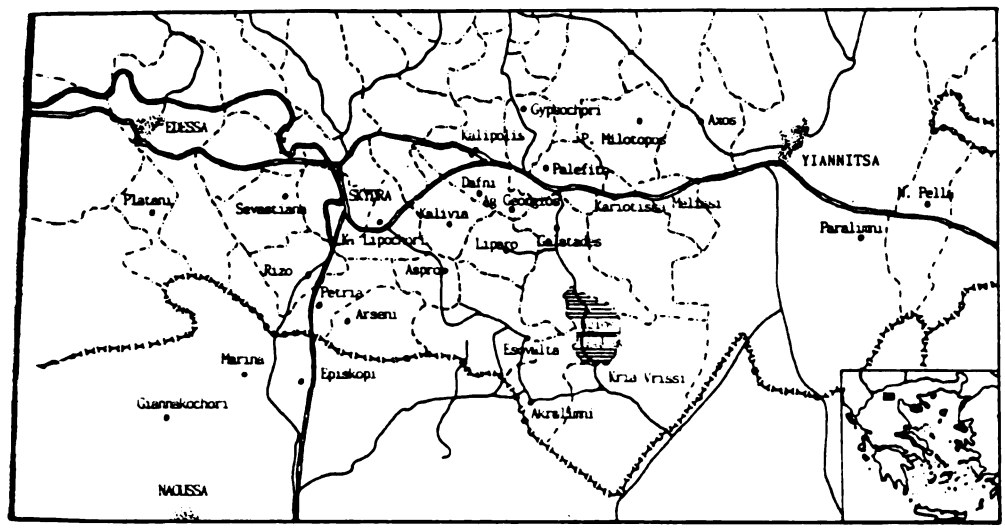

Figure 2. Map of Agios Loukas and Surrounding Area (1983)

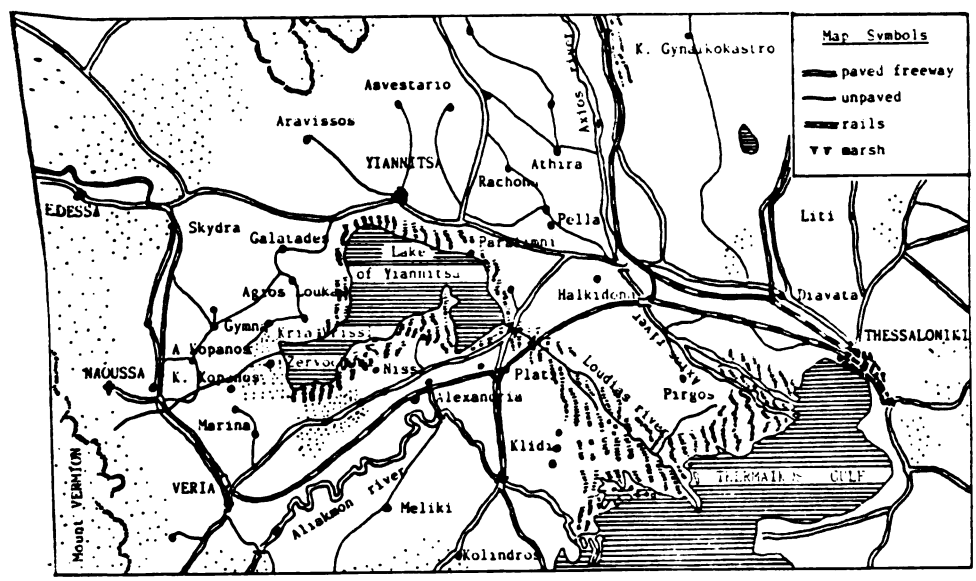

Figure 3. Map of Lake Yiannitsa and Surrounding Area Before Its Drainage (1905)

Spring were fields dry enough to allow plowing. Corn and beans were the only crops cultivated for staple food. The swamp and the lake were the natural habitat for a great number of birds, animals and fish. Thus, hunting and fishing was very easy and provided the necessary protein for the villagers. As Minos, a 77-year old retired farmer, pointed out:

> "We were eating meat every day. Hunting was plentiful; wild pigs, hares, pheasants, ducks, etc. Fishing was abundant too. Every spring you could get three to four big fish (grivadia) every time you cast the fishing gear".

Wood was also abundant in the thick forests of the swamp and provided fuel for cooking and lumber for house construction. According to Minos, when he arrived at the village in 1924 at the age of 17, only three large houses existed; they were large, two stories high, made of earth bricks and covered with ceramic tiles. All other houses, about 17 to 22, were huts made with bush and covered on both sides with a mixture of soil and straw or a mixture of straw and cow dung.

The swamp was a blessing as well as a curse. In Agios Loukas and the nearby area, malaria was endemic. According to Whipple (1944:84), the plains of Northern Greece were "...the principal breeding sources of mosquitos in one of the most malarial regions of Europe". The endemic index, estimated by the Mission of the Army of the East in 1917-18, varied between 50 to 100 percent for the area around the Lake of Yiannitsa (Damianakos, S. et al; 1978:436f).

The great shortage of land in Greece following the

first World War and the influx of almost 1.3 million refugees from Turkey forced the Greek government to spend large sums of money for draining and reclaiming swamps and inundated and seasonally flooded land. The main objective was to provide farmland for subsistence farming to landless refugees and natives. As part of those reclamation projects, in 1935, over 77,000 acres near the Lake of Yiannitsa and in the Loudia marsh were made available for cultivation.

After the completion of the drainage work. new crops (mainly cotton and high yielding varieties) were introduced toreplace and/or improve traditional staple foods --corn, beans, wheat and sesame. Cotton soon became the main cash crop. Livestock was also improved through artificial insemination of native strains of cows. During this period and mainly after the mid 50s, agents of the Agricultural Extension Service played a very important role in helping farmers to adopt new farming techniques. With the introduction and expansion of a sugar beet industry, more farmers started planting sugar beets. Canning tomatoes, decidous fruits (mainly peaches and burley tobacco were introduced during the second half of the 1960s. Introduction of these crops was made possible by the completion of a new irrigation and drainage project which was followed by consolidation of the fragmented holdings. Today, all land inthe area is irrigated, with water distributed to the fields through U shaped concrete channels.

3.2 History of the Village

The village of Agios Loukas was incorporated into the modern Greek state on October 18th, 1912 when the Greek army defeated the Turkish occupation army only a few miles from the village. About half the population at that time was of greek origin, the rest being of Turkish and Bulgarian nationality. Between 1903 and 1908 the area just east of the village, known as the Lake of Yiannitsa, experienced an intense guerillawar between Greeks and Bulgarians having fishing huts on various areas of the shallow lake.

Prior to the Greek takeover, Agios Loukas, along with two other villages, was controlled by a Turkish Aga who owned all the land. He provided draft animals, seeds and farming equipment to village farmers; they retained half of the crop and the Aga withheld the other half. Of course, farmers were not satisfied with this fifty percent split (called "misiakarika"), and made every effort to cheat the Aga and his soldiers and foremen.

By the late 1930s, the stables where the Aga kept his horses had been turned into an elementary school; his corn drying barns were in tact as late as 1940. Actually several refugee families had used those barns as temporary shelter when they first came to the village.

Immediately after annexation of the village as part of the Greek territory (1912), about a third of the non-Greek citizens left the village. All the others, non-Greeks, left the village between 1924-1925 following the Treaty of Lausane of 1923.

The people who remained in the village, Greeks, resumed full control of the land. Beyond that significant change in the tenure system, nothing else really changed over the next ten to fifteen years.

During the 1930s the most dramatic changes in the history of the village occured. The Greek state, faced with the acute problem of accomodating 1.3 million refugees from Asia Minor, started investing large sums of money for land improvement schemes. The American Foundation Company was hired to drain the lake of Yiannitsa and the surounding swamp.

Following the completion of the drainage work in the mid 1930s, refugees who previously had settled mainly in the Departmets (Nomoi) of Grevena and Kozani, started pouring into the village. Yiannis, a retired farmer who was among those who were the first to settle. explained the reasons for choosing to migrate once more:

> "We were given a plot of land in Grevena but the land was very poor. We ploughed and sowed the fields and we were getting nothing in return. The soil was full of stones".

Five persons previously settled in the village of Agios Georgios of Grevena managed to settle in the village of Agios Loukas by 1927, and at about the same period ten to twelve families settled in the next village of Kria Vrissi. Those families formed an information network and the nucleus of a social system that attracted other people and provided them with assistance during the first stages in the process of mass inmigration.

The newly opened lands were very fertile and gave yields not easily attained by farmers elsewhere. With the concomitant eradication of mosquitos carrying malaria the first migrants wrote glowing accounts back to their relatives and friends. As a result, the population of the village quadrupled between 1928 and 1940. But the earlier settlers feared that newcomers would take over their land; hostility wasexpressed.

When the Land Distribution Committee visited the village to decide, in cooperation with local people, the allocation of land for farmers in the village, the locals complained that the distribution of more land would attract more outsiders. They would be satisfied, they said if they couldretain the land theyalready farmed.

Thus. land allocated to the village to be held as communal property was very limited and was insufficient to accomodate people in the future as the population was expanding. Persons who entered farming in the next generations were receiving increasingly smaller plots of land from the communal land. Descendents of the previous generation now regret their father's and grandfather's decisions, and blame them for having such a short sighted view of the needs of future generations.

Social relations between the natives and the new settlers were not good at the beginning. They wouldn't even greet each other in the streets. The village was divided into two opposing groups.(1) Marriage --a very serious family business controlled and arranged by the parents-- would

never cross the lines of the two groupings. Gragually, as the village was drawn into the larger society, those differences and the old antagonisms lost their salience. Indeed they became instead a basis for social competition.

Newcomers were ambitious, hard working people and open to new ideas. They were the first to try new crops and farming practises. Through their success in farming, they gradually gained respect from the native people. Alekos, narrating the story of his family during the early years of their struggle to settle in the village, emphasized the initial hostile environment and the respect that his father was able to attain from native people through his success in farming:

> "Here in the village we were considered by the natives as poor and useless people. When in 1938 my father produced 12,000 "okades" (2) of wheat (15,360 kg) from his 4.8 hectares of family farm alloted to him in 1937. it was considered a very big success. The majority of the farmers in the village produced 5.1 to 9.0 tons of wheat. One night my father coming back home from the coffee house said to my mother with pride: You know what happened today Despina? Paulos (a native shopkeeper) greeded me as I was passing his store with. Goodmorning Mister Abraam".

Refugees brought into the village the institution of the coffee house. Males would gather in the coffee house every evening to play cards, drink coffee or ouzo and

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(1) McNeill (1957:95-107) provided similar accounts for the social relations between old settlers and refugees in the village of Neo Eleftherohori (Department of Pieria):

> "The two groups (old settlers and refugees) stood more or less apart. especially at the beginning. Many of the Caucasus people seemed wild and barbarous to the old settlers. ...The old settlers look down upon them (the refugees) as careless farmers and poor housekeepers".

(2) One "oka" (plural "okades") is equal to 1.28 kilograms

discuss subjects related to farming and the social life of the village. Previously, during the Ottoman occupation of Macedonia, there werenocoffee houses (Tsitselikis, 1963: 502). Natives gradually adopted the new institution and started paying regular visits to the three coffee houses opened along the main street of the village.

While the village was experiencing a better life for the first time in its history, the Greek-Italian war erupted. The invasion of Nazi armed forces, six months later, brought the economy to a standstill. Although the village was not a place of battles or major guerrilla activity, its economy as part of the national economy was still affected by the high risk conditions created and as well as the tremendous inflation rates. Alekos would not forget those days:

> "In 1941 we planted corn. We harvested about 15 to 20 thousand "okades". The price of corn was about five to six drachmas per "oka". One day my father was made an offer of 100 drachmas per "oka". My father accepted that unusually high price and sold two thousand "okades" of corn. We placed an order for a pair of horses and a cart. By the time we had them and paid the money the price of corn skyrockened to 1,100 drachmas per "oka". The following year we tried to produce the family food and barter products for other products (oil. cloths). Although we never knew if we were going to manage for the next year, we never left the fields idle. We sowed the fields each year so that those who would survive have something to eat. In 1944 for example we planted wheat and the crop turned out to be real good. We mowed the fields but we never went back to threshing the crop. It was very risky to go out in the fields. You could be shot without reason. The crop was left to rot in the fields".

The end of World War II was followed by an equally disruptive civil war that lasted for four years (1945-1948). Massive reconstruction efforts started immediately after the

end of the civil war through significant financial and technical assistance from the United States.

Cotton was introduced to the village in 1948 and soon became the main cash crop for the farmers. Credit and technical assistance soon became available to farmers through the Agricultural Bank (founded in 1929) and the Agricultural Extension Service (established in 1953). During the early 1950s the first privately owned tractor began to operate in the village. The demand for its services were so great that farmers had to place their names on a waiting list. During the same period new improved varieties of wheat began to replace the native varieties. Fertilizers and pesticides became available through the Agricultural Bank, and a program to improve the local strains of cows through artificial insemination was set forth. Also, farmers started building new houses using bricks and ceramic roof tiles to replace the old houses made of earthen bricks and covered with rye straw.

Sugar beets were introduced in 1962 by farmers who were not satisfied with the production of cotton. Early raining seasons several times in the past had ruined the cotton crop because farmers were unable to harvest. But sugar beet production never gained a dominant position in the production system of the village. Yields and prices paid according to the sugar content of the crop were very rarely considered by farmers as satisfactory.

Various tobacco exporting companies promoting the cultivation of burley tobacco visited the village in 1966.

Six to seven farmers were persuated and tried the crop that year. The results were very satisfactory and they were very soon followed by other farmers. In the next decade, burley tobacco become the major production crop of the village.

Tobacco brought about many changes in the structure of agriculture andthe social organization within the village. These impacts, both direct and indirect, are the main focus of this study and will be discussed in more detail in Chapter 3.

Tree crops. mainly peaches were planted by several farmers during the 60s. In an area west of the village peaches are the main crop today and about 90 percent of the total Greek peach production comes from there. But tree fruits did not become very popular in the village. It reached a peak of about 20 percent of the total farming acreage in the village between 1975 and 1978 and thereafter started dropping off as a result of low prices due to unsuccessful marketing of the huge surpluses.

During the 1970s a new irrigation system brought abundant water to the fields. This project was followed by a redistribution of the land. As a result, the number of farmland parcels dropped from 1,003 in 1961 to 559 in 1981 (Table15). Although water was made available in large quantities. irrigation still requires the use of additional power (tractors, diesel pumps) in order to properly apply the water in the fields.

During the same decade electricity and drinking water were brought to nearly every home in the village. New and

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better homes were constructed during this period. A census taken in 1970 revealed that about half (48.6 percent) of the buildings (houses, warehouses etc) were built during the five year period of 1966-1970 (Table A-3).

3.3 Population Change

Agios Loukas. as did many other villages and towns of Northern Greece, experienced some significant changes in the size and structure of its population, especially during the pastfour decades as part of the modernGreekstate.

The first enumeration taken by the Greek army in 1913 estimated the population of the village as 330 persons (Table 1). Seven years later, the first census of the newly incorporated areas revealed an 18.8 percent decline for the village and an even larger decline of 27.5 percent for the district of Yiannitsa. The departure of persons of Turkish and Bulgarian nationality was the principal reason for that decline. The village population continued to decrease further to 158 persons by 1928, an all-time low, as the last non-Greek nationals left the village in accord with the Lausanne Treaty of 1923.

Although Greece received 1.3 million Greeks expelled from Asia Minor and lost 400,000 Muslims repatriated from Greece to Turkey, Agios Loukas did not make any significant population gains. While 24,128 refugees (2,035 before 1922 and 22,093 between 1922 and 1928) settled in the District of Yiannitsa, thus resulting in a 52.0 percent increase by 1928

Table 1. Population Trends Between 1913 and 1981 for Agios Loukas, District of Yiannitsa, and Greece.

	Agios Loukas	District of Yiannitsa	Greece
Mean Altitude (meters)	10	na	na
Area (square kilometers)	7	753	131,957
Population:			
1913	330	32,997	na
1920	268	23,916	5,016,889
1928	158*	36,344	6,204,684
1940	613	45,810	7,344.860
1951	866	53,071	7,632.801
1961	1,133	60,870	8,388,553
1971	1,086	57,269	8,768,641
1981	1,053	61,969	9,740,417
Annual Rate of Population Growth (%)			
1913/20	-2.9	-4.5	na
1920/28	-6.4	5.4	2.7
1928/40	12.0	1.9	1.4
1940/51	3.2	1.3	0.4
1951/61	2.7	1.4	0.9
1961/71	-0.4	-0.6	0.4
1971/81	-0.3	0.7	1.1
Density (inhabitants per square kilometer)			
1961	161.9	81.1	63.6
1971	155.1	76.1	66.5
1981	150.4	82.3	73.8

SOURCE:(a)Ministry of Coordination. Regional Development Service of Central and West Macedonia. 1975. Index of Municipalities and Communities of Macedonia and Thrace, Years 1940-71. Thessaloniki, No 57, Pp 124 (in Greek)

(b)General Statistical Service of Greece. 1929. Population of Greece at the May 15-16, 1928 Census. Pp 267, Athens, Greece: National Printing Office

(c)N.S.S.G. 1982. De Facto Population of Greece, April 5, 1981 Census, Athens: National Printing Office, Pp 154

(na) not available

(*) only 5 persons were refugees from Turkey

over the 1920 population (5.4 percent annual rate of growth as compared to 2.7 percent for the national population), only five persons (four men and one woman) settled in the village of Agios Loukas. The fear of getting malaria prevented the influx of refugees until the mid 1930s, when the drainage work was completed. Many persons came to settle in the village, but most of them soon left. As Yiannis, a retired refugee farmer, and one of the first to come and settle in the village, put it to me:

> "From every 20 to 30 persons coming, only four would settle. The rest would return to their home villages within a month. There was no person free of malaria. Although we were constantly experiencing chills, we decided to hold on to the land".

By 1940, a few months before World War II, the village population reached 613 persons, a 12.0 percent annual rate of growth since the previous census of 1928 as compared to 1.9 percent for the district of Yiannitsa and 1.4 percent for the Nation. This dramatic population explosion was the result of new internal migration movements within Greece from the mountainous areas to the drained and developed lands in the District of Yiannitsa and other areas in the northern plains.

World War II, the Nazi's occupation of the country. and the civil war of 1945-1948, did not affect a slowing of the population growth. On the contrary, from 1940-51 the village population increased at an annual rate of 3.2 percent as compared to 1.3 percent for the District of Yiannitsa and only 0.4 percent for the country as a whole (Table 1) for migration continued, although at a slower pace.

The next decade, 1951-1961, saw further significant population gains for the village of Agios Loukas. By 1961, the population density reached an all-time high record --162 inhabitants per square kilometer-- two times higher than the population density of the District (81.1 inhabitants per square kilometer), and two and half times higher than the national population density (63.6 inhabitants per sqare kilometer), (Table1). But this was the last decade of population increase.

Pressure upon the land became great and opportunities opened up in other areas of the country and abroad (United States, West Germany, Australia and Belgium). Over the next two decades there were slight population decreases (even though the district of Yiannitsa, as many other rural areas of the country, experienced an 0.7 percent annual rate of population growth).

Data derived from the 1961 and 1971 population censuses (Table A-1) reveal that outmigration from the village increased during the sixties. In 1961 106 persons or 8.9 percent ofthe "de jure"[1] population of the village were living in other places of the country and only 0.4 percent abroad. By 1971 those who migrated to other places within the country and abroad were 12.2 percent and 3.1 percent, respectively, of the population of that year.

More recent data on migration of families compiled from

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(1) "de jure" population, refers to all persons legally included in the registry book of the village, irrespective of where they might happen to reside at the day of the enumeration.

Table 2. Present Place of Residence of the Families Listed in the Population Register, Agios Loukas, 1983.

Place of Residence	Number of Families	%
1. Village	313	62.0
2. Other places in Greece	77	15.2
Total (Greece)	390	77.2
3. West Germany	30	5.9
4. Belgium	2	0.4
5. United States of America	79	15.7
6. Canada	1	0.2
7. Australia	3	0.6
Total abroad	115	22.8
All Places	505	100.0

SOURCE: Village Population Register, Analysis by the author

the Registry Book of the village with the help of local informants (Table 2) indicated higher migration rates for the entire period of 1955-1984. Of the 505 families presently recorded in the Registry Book, 313 families or 62.0 percent live in the village, 77 families or 15.2 percent live in other places within the country and the remaining 115 families or 22.8 percent live abroad, mostly in the United States (79 families or 15.7 percent) and in West Germany (30 families or 5.9 percent).

Population decrease also resulted from lower fertility rates. Data on the median number of children ever born to women of various cohorts revealed a dramatic shift in the fertility behavior of women in Agios Loukas (Table A-2). While women born during the first two decades of the present

century gave birth to an average of five children, those born between 1921 and 1940 gave birth to an average of only 3 children. A further reduction by one child is indicated by younger cohorts but this evidence is not conclusive since women in those cohorts have not completed their reproduction cycle.

To summarize, throughout the last seventy years, the population of Agios Loukas was mainly changed through migration movements rather than natural factors (fertility, mortality). At the beginning of the village history (1913-1928) historical events (war and exchange of minorities) resulted in lowering the village population to about half of the 1913 size.The trend was reversed in 1935 as a result of opening of new and fertile farm fields. During the twelve year period of 1928-1940, the population of Agios Loukas increased with an annual rate of 12.0 percent. Population continued to increase up to 1961. Thereafter, population decreased as a result of limited opportunities in both farm and off-farm jobs. With opportunities opened up in other areas of the country and abroad out-migration surpassed the net natural increase. Fertility rates have also decreased by two live births per woman.

3.4 Contemporary Life

I was well acquainted with life in the village of Agios Loukas some 30 years ago. My parents served as elementary school teachers there for ten years (1) and I myself completed

my elementary schooling in Agios Loukas. Upon my graduation we moved to the town of Yiannitsa so I would be able to continue my studies in the town's high school. Thereafter, until recently, I never had occasion to go back.

Visiting the village 25 years later, I was very much surprised by the magnitude of the change I encountered. Most of the houses were new with furniture and modern appliances --not to mention the color TV sets. Running water and electricity are now available to everyone. Some of the houses were built under an architectural plan and could easily compete with expensive houses found in the towns of the area. One of the houses --owned by the largest tobacco grower-- was even built with plans and some materials brought from the United States. It is still incomplete and the cost so far has run to eight million drachmas, (80,000 U.S.D.).

About half of the homes have telephones, and people can call Kria Vrissi and Yiannitsa at a minimum charge. Through the direct network they can call almost any place in Greece and all countries participating in the international network. Through that network, the village is able to send and receive calls from those who have migrated to the United States, West Germany and Australia. Hired farm workers also call to find out whether there are jobs available to them.

Apart from the new and well built homes, the numerous

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(1) They gained wide respect and recognition from local people for their dedicated services to them and their children Building upon this respect and trust, my research was made much easier. Actually, in several cases I was reminded that my unusual questions would have remained unanswered if I were not "the teacher's Argyris son".

new and high-powered tractors are noteworthy. Throughout the year tractors often cross the main street going back and forth to the fields. During the evenings several are parked across from the coffee houses and the cafeterias. In addition about 20 pick-up vans and some 30 passenger cars (among them five to six BMW's), and one taxi provide transportation to people in Agios Loukas. A quarter of a century ago, the only transportation was the public bus crossing the village two times a day. At that time the busses mostly served the purpose of transporting villagers and produce to the peasant markets in Yiannitsa and Kria Vrissi.

Men still gather every evening in the five coffee houses of the village; they are larger now than the old were. Even during the busy season men visit at least one of the coffee houses each day. If a man does not, his absence is noticed and on his next visit he will be asked by several of his friends to provide reasons for his absence. A man's failure to pay regular visits to at least one of the coffee houses puts his manliness into question. If after marriage a man stops visiting the coffee house as frequently as he used to before his marriage, or leaves earlier, he is accused of being under the control of his wife --something a "real" man should strive to avoid at all cost.

One of the main activities of men in the coffee houses is card playing. Very often card playing turns into gambling, although gambling is illegal, and sometimes large sums of money change hands. There are many villagers who would be very satisfied if they could visit the coffee house

every night to play cards. For them, this is the greatest entertainment. Thereafter, according to local informants, the most popular activities in descending order, are: exchange of news; discussion of politics; drinking alcoholic beverages with a group of people; and discussions about farm related subjects. There you can hear farmers talking proudly of their farm results (high yields and quality of products obtained) and blaming specific farmers for their low yields and failures in farming.

Two newspapers are available in one coffee house while a color TV set is available in each of them. Although a visit to a nearby village or town is something done everyday by several farmers of Agios Loukas, interaction among the villagers is higher than with outsiders.

The observations made by Photiadis (1965:54) regarding the role of the coffee house in the social structure of Stavropolis are equally applicable to Agios Loukas. As he pointed out (p.50):

> "By exerting control over the male the coffee house also exerts control over the women, the children and in turn, the entire village. The male adult demands that his family members behave in line with the expectations of the coffee house, either because he likes to preserve his status in the coffee-house or because he actually adopts its attitudes... Mothers often reprimanted their daughters who have been seen out late by saying, "How is your father going to face the coffee house after this?"

The control exerted by the coffee house is presently being challenged by the youth of the village (mainly boys), who managed to form their own open club, the cafeteria. Three cafeterias are in operation today and are regularly

visited by boys and girls. Adults rarely visit a cafeteria, and when they do it is for a limited time only. When I asked Vassilis, a 53 year old farmer, if he pays regular visits to the cafeteria, he replied:

> "I do not go to cafeterias. Over there the youth (boys and girls) gather. They smoke. A boy might embrace a girl. I feel embarrassed. That is why I don't go there".

The main activities of young boys in the cafeterias are: discussions of or watching soccer games; watching a new video film on display every day;(1) talking with friends about their latest love affairs; and day-dreaming about getting an easy and very profitable job or a big dowry. Political discussions are not favored by young boys visiting the cafeterias.

Even during the busiest days of the season one can see several of them drinking their coffee or their beverage and yelling and scoffing to some of their peers driving tractors along the streets on their way to the fields; "slave, helot, youare working again" are the kinds of words shouted at them. Occasionaly, when they run out of pocket money, the idle ones will work for several days and then quit when they have enough of the hard life. Even if their fathers are in desperate need of extra hands, they won't help even for immediate payment. They prefer instead to work for someone

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(1) A video set is the number one equipment in a cafeteria. With that the young patrons of the cafeteria have total control over what they see and when they will watch it. Thus they manage to successfully overcome the control exerted by the state over the broadcasts of the two TV channels. This could have far reaching implications.

else for as long as they wish, demanding, at the same time, to be provided with pocket money every week. According to Isaac, a 60 year old farmer:

> "80 percent of the young boys in the village do not work, spending their time instead in the cafeterias, whereas in the past 80 percent worked regularly and 20 percent did not".(1)

Farmers are very upset because young boys in the village prefer leisure activities instead of farm work. Girls, they believe, work more than boys of the same age. As Yiannis put it:

> "It is hard to find a lazy girl; it would be a shame if the girls did not participate in work activities. The girls work and join their parents in the fields, but the boys do not. They do not want to work. They want to work when they feel the desire to do so. Of course, not all boys avoid working, but it is a fact that girls work more than boys".

As for the reasons associated with the reluctance of young boys to work, several explanations have been suggested.(2) Those who are reluctant to work are from the wealthier families in the village. They may have been spoiled by the extra pocket money they get from their parents who attempt to provide them with all the things they

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(1) Isaac's estimate is probably overrepresenting the percentage of idle boys. According to a number of local informants a fifty percent figure seems closer to reality.

(2) The reluctance of farm boys to commit themselves in agriculture resembles to a large extent the similar phenomenon described by Greenwood (1976) in his study on the commercialization and demise of family farming in the Spanish Basque country. As Greenwood pointed out in a latter article (1980:14):

> "...A major cultural crisis is underway in which the prestige of agriculture has declined so greatly that very few families are able to convince one of their children to take these profitable farms as an inheritance".

themselves were deprived of in their youth. On the other hand, young boys from poor families in the village work hard, and some of them have already bought tractors and expanded their scale of operation.

Others blame the fact that a young boy today can very easily find a job for a few days, just to earn his own pocket money. As Sakis, a young farmer remarked:

> "During the summer you can come over to the cafeteria and beg some of them to come and help you in the curing barn. They ask for 2,500 drachmas for hanging tobacco from noon to afternoon. They work for 30 days earning 60,000 drachmas (600 U.S.$) which will last all year. Can that be considered enough money? One can make a deal with them during the winter when they are in need of money by just offering them 1,000 drachmas for every day they promise to work for you in the coming summer".

Boys with whom I spoke mentioned the fact that there are fathers who could spend as much as 100,000 drachmas on night clubs ("xenihtadika") and then refuse to give five hundred drachmas to their son for pocket money. Boys are aware of that and refuse to respect and listen to their fathers.

During the last 10 to 15 years. night clubs have "sprouted up like mushrooms", as one farmer put it, within a 20 kilometer radius from the village. Most of them, located across the main roadway from Edessa to Yiannitsa, are visited by tobacco growers from Agios Loukas.

Stories about the night club activities of several tobacco growers in their fifties and sixties are frequently narrated in the coffee houses. From there, information is spread throughout the village and thus becomes a common

secret. Some feel embarrassed, others (women and girls) feel anger, and others cannot believe that a sixty year old farmer went crazy with one of the girls from the night club.

Spending money in those night clubs reached epidemic scales five years ago according to local informants. Several tobacco growers nearly went bankrupt. As some informants pointed out: "several tobacco growers spend most of the short-term cash loans received from the agricultural bank in those night clubs". Every time tobacco growers receive a portion of their cash loans, night clubs become overcrowded.

Today, visiting those night clubs and spending large sums of money has been curbed to some extent. Local informants estimated that about 40 to 50 percent of the adults in the village --mostly married and in their fifties-- are still visiting the night clubs Some of the tobacco growers who were unable to pay back the loans received this year from the agricultural bank through the local cooperative could not because they had spent large sums of money in the night clubs.

With reference to women and girls in the village, their position has improved during the last 10 to 15 years and more change appears iminent. Girls are successfully gaining control over their personal freedom. Initially parents would not accept that girls need to go out and visit with friends at one of the cafeterias in the village. "Why are you going out every night? What are you? Are you boys?" But the pattern of behavior by girls is now accepted. Most girls today, especially during the summer months gather in one of

the three cafeterias and the one summer disco of the village. Some do not even ask parents for permission. As Christos, a middle age tobacco grower, emphasized:

> "My daughter (21 years old) never asks me for permission whenever she wants to visit the cafeteria. but she knows that by 10.30 pm she has to be back home. In my day, girls never even dared to ask for permission to go out and if they had the courage to do so their father would wave his head negatively without even saying no. Today even if he says no, a quarrel will follow with his daughter asking for explanations and not accepting a plain no. This is a sign of women's emancipation in the last years".

The role of women within the family has also changed. They are increasingly involved in the decision making process. Decisions on expenditures and investments, and on changes inthe family farm are not reached without the involvement of women and the adult children of the family.

Women are very valuable, given the shortage of manual labor, in helping their husbands do farm chores. Some have managed with the encouragement of their husbands, to get license to drive the tractor. People in the village do not stare at them any longer when they pass on the roads of the village driving the tractor. Young girls increasing participate in the tractor driving courses offered each year by agents of the Extension Service at one of the village coffee houses.

The drastic reduction in numbers of domestic animals is also attributable, in part, to the increased involvement of women in family farm decision making. Previously, there were no homes without at least one milk cow and traditionally the women were responsible for its care. They had to feed and

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milk the cow twice a day, clean the stable and lead the animal to the village center, the only place where drinking water was available. In the meantime the men would be in the coffee houses. Women complainted of all extra work they had to do while their husbands did nothing. When I asked a 40 year old farmer why he did not have any cow he told me that he plans to buy one. His wife, who was present at the time of the conversation, immediately reacted by saying:

> "If you want a cow you should take care of it. I don't want you to bring a cow here and then force me to take care of it while you spend your time in the coffee house".

These observations point to the fact that social relations within Agios Loukas are undergoing a transition -- from a stage where the father has unquestioned authority to a stage where there is a more balanced power relations within the family. As Ananikas (1978:13) points out, "the rural family is becoming less patriarchal and more equalitarian as a result of the new role of the women within the family structure".

In this restructuring of the family institution, childrentoo are inclined to become more directly involved in family decision making and to be less dependent on their parents. Thus, pressures build up and often neither parents nor youngsters understand each other very well. Parents do not comprehend the needs of their children, which nowadays are quite different from what they were in their own youth. They think that as long as children are provided with food, clothing and education they should be happy; they recall the

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enormous deprivations they themselves faced during their youth. Comments like "the youth today went crazy", or "youngstersdo not know what they want", are frequently made by adults and elderly people in the village.

This is in line with the observations of Photiadis (1976:34) who characterized the changes concerning the familial institution of a small Greek town as being more drastic and including more discords "than all the changes which took place in the Greek village in a number of generations, and probably centuries" (emphasis added).

In summary, farmers in Agios Loukas witnessed an enormous change in both the ecology and the population of their village. Whereas, at the beginning land was abudant and fertile the influx of about 400 immigrants, mostly during the 1930s, resulted in creating an enormous pressure upon the land resources of the village. At the same time, as the village was integrating into the larger Greek society, rising expectations put more pressure for performance on the economic institution of the village.

Initially, new crops (mainly cotton and high yielding varieties) that replaced and/or improved the traditional staple foods (corn, beans, and later wheat), more inputs (fertilizers, insecticides) and new farming techniques resulted in significant increases of the farm income. Soon those increases were surpassed by continued population growth and rising expectations. By 1961, population density reached an all-time high record. 162 inhabitants per square kilometer, as compared with 81.1 inh. per sq. km. for the

district of Yiannitsa and 63.6 inh. per sq. km for the national population density. During the 1960s the opportunities opened up in other areas of the country and abroad eased some of the population pressure.

The completion of a new irrigation and drainage project followed by the consolidation of the fragmented farmland, during the second half of the 1960s, opened up new opportunities to farmers in Agios Loukas. Three new crops (canning tomatoes, peach trees, and burley tobacco) were introduced into the village. All those three crops were capable of providing a higher income per unit of land. Among them, burley tobacco soon became the predominant crop and brought about many changes in the structure of agriculture and the economic and social patterns of behavior within the village. Those impacts, both direct and indirect, are the main focus of this study and will be discussed in more detail in the third chapter.

II. THEORETICAL FRAMEWORK AND METHODS

1. Theoretical Perspectives

Two broad areas of theoretical concern have guided my research. Firstly, one must consider that throughout the world many formerly isolated villages are being penetrated by national and international market forces. The literature on "center-periphery" interrelationships and on the "Green Revolution" and relevant to understanding some of these impacts. On the other hand, farmers and their families, conditioned by the cultural and institutional environment in which they live, and often facing extreme variability in weather and prices, have to make choices on how to allocate scarce resources available to them. The literature on agricultural decision making is useful for this purpose.

1.1 Center and Periphery Interrelationships

The world economy perspective provides useful insights for understanding the ongoing processes in Agios Loukas. What is presently taking place in Agios Loukas is another example of the intrusion of national and international market forces into the fabric of traditional farming communities.

The overwhelming majority of community studies conducted up to the early 1970s in various countries throughout the world emphasize the traditional characteristics of local

communities, the changes taking place, and those aspects of the community which either inhibit or promote change. Communities were regarded as relatively autonomous units with institutions serving to maintain the social status quo and to fulfill the needs of individual citizens. Development was seen as a linear progression from "traditional" to "modern" enhanced through the introduction of modern technology, institutions, and values into the community structure.

Beginning with the late 1960s, anthropologists were increasingly attracted to the new theories of development and underdevelopment that challenged the underlying assumptions of the neoclassical model of development (1) (Hoben, 1982:356). The idea that communities, whether "traditional" or "primitive", had survived to the present in a virtual static state and only recently were undergoing modernization, was no longer seen as a useful concept by anthropologists and other scholars engaged in community studies (Cole, 1977:364). A degree of Western ethnocentrism seemed

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(1) The neoclassical model of development put into practise at the end of World War II was aimed at increasing world trade. It was assumed that through trade with developed countries, underdeveloped countries would acquire the technology needed for agricultural and industrial development. Although trade occured under conditions of unequal productivity and therefore unequal exchange, neoclassical economists assumed that free trade would have an equalizing effect on factor prices and incomes. The built in mechanism of the "comparative advantage" will result in an international division of labor by allowing each country to specialize and trade in what it could most efficiently produce. The model assumed that all countries will gradually move towards higher stages of development and that today's underdeveloped countries are in a stage which the now developed countries passed long ago.

to be woven into the approach.

Andre Gunder Frank (1972b: 321-97) challenged the assumptions of these classical models of development and offered a theory of underdevelopment in terms of "dependency".[1] According to Frank (1972a:3-4) "the now developed countries were never underdeveloped, though they may have been "undeveloped". Underdevelopment of a country is not a reflection "of its own economic, political, social and cultural characteristics or structure"... but "...in large part the historical product of past and continuing economic and other relations between the satellite underdeveloped and the now developed metropolitan countries". Further, Frank argued that development of a country can be achieved only with processes generated or stimulated within and not through the diffusion of capital, institutions, or values from the "international and national capitalist metropoles". According to Baran (1957), whose writings inspired Frank in formulating his theory, the advanced industrial nations are fundamentally opposed to the industrialization of the underdeveloped countries since the latter provides them with raw

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(1) Dos Santos (1970:231), another leading figure among the scholars of the so called Latin America School, provided the following. frequently quoted, definition of the key term of "dependence":
"By dependence we mean a situation in which the economy of certain countries is conditioned by the development and expansion of another economy to which the former is subjected. The relation of inderdependence between two or more economies, and between these and world trade, assumes the form of dependence when some countries (the dominant ones) can expand and can be self-sustaining, while other countries (the dependent ones) can do this only as a reflection of that expansion, which can have either a positive or a negative effect on their immediate development".

materials and investment opportunities.

Wallerstein (1975,1980), influenced in turn by the writings of Frank on underdevelopment, provided the paradigm of a world-system of capitalism based on the international division of labor that is mediated through trade exchanges without the need for a unified political structure. Wallerstein (1980:347-8) defines the "world-system" as:

> "...asocial system,..thathasboundaries, structures, member groups, rules of legitimization and coherence. Its life is made up of the conflicting forces which hold it together by tension, and tear it apart as each group seeks eternally to remold it to its advantage".

Wallerstein traced the develpment of the modern world-system in the sixteenth century when it emerged as a European-centered world economy. Since then through cycles of expansion and contraction inits geographical scope it encompassed the globe (world-scale interdependence). Drawing onanalyses of dependency and uneven exchange, Wallerstein's paradigm calls upon the importance of the interrelationships between "core", semiperipheral", and "peripheral" states delineated upon their role in the overall economy.

While it is not my intention here to give a detailed presentation of thisbody of literature, I would like to suggest that some useful insights are provided by the world-system perspective for understanding local communities as a setting where a variety of forces (local, national, and international) intersect. Cole (1977) and Nash (1981) provide examples of ethnographic studies building upon the world-system perspective. As Nash (1981:393) pointed out, "what distinguishes the present interest in the world scope

of anthropology is the paradigm of integration of all people and cultures within a world capitalist system".

The present study may be able to throw some additional light on how outside market forces, such as those that dependency theory and world-systems theory are concerned about, intrude into the socioeconomic fabric of a traditional agricultural village in Greece. What is it about the village social structure that makes the intrusion of such forces possible? Is the periphery always at the mercy of the center? Were there any options available? Consideration of how burley tobacco was introduced to Agios Loukas --and what the eventual impacts were-- provides a good case study for at least contemplating the validity of arguments voiced by scholars like Frank. Wallerstein, Furtado, and others.

1.2 Rural Development and the Green Revolution

Many of the changes underway in Agios Loukas during the last thirty years relate to issues raised by a number of scholars on the effects of economic development in rural areas and the impact of new agricultural technology. The introduction of burley tobacco, immediately after the completion of an irrigation project, along with the technology that comes with it, is similar to the "Green Revolution" programs in Asia.

Several of the adverse consequences of the "Green Revolution" in various parts of the world have been pointed out by a number of researchers.

a) **Rural stratification:** The general trend was toward increasing rather than diminishing the institutionalized social inequalities. Large landowners were able to adopt the new technology more easily because of their wealth and their access to credit. Franke (1974:88) notes that in Java the wealthier families, "...used various means of preventing the smallholders from gaining access to the loans or to the technology" (meetings to publicize government loans were never called and notice of bank loans was passed along kinship and neighborhood lines). Ladejihsky (1973:136), examining the impacts of the green revolution in India. notes that it "is highly selective in its spread-effects" and "has exacerbated the already difficult rural equity issues in a variety of ways". Ladejinsky also points out the fact that "the green revolution did not create the differences in size of holdings and other owned resources, greater access to credit and inputs as between groups and their respective political and economic roles in the community" (p. 136) but of course the green revolution "did not help to smooth them out" (p. 137).

Epstein (1973,1975), after restudying two rural villages in India, concluded that during the 15 years that elapsed "...the rich have become richer while the poor became poorer, not only relatively but also in absolute terms". Similar remarks were made by Harris (1972:30) and Griffin (1974:29) in terms of easier access to credit for large Philippino farmers In contrast, small farmers take a greater risk in adopting the new rice varieties. A crop

failure, even for a single year, will force small farmers to sell their land unless additional credit is extended. As Wharton (1969:470) points out, the total cash costs per hectare planted on the new rice varieties in the Philippines was 11 times higher than for traditional varieties.

Skorov (1973:17) notes that "the process of class differentiation in rural communities is accelerated by the new technology, resulting in prosperity for a small number of farmers and impoverishment and even ruin of the majority of the peasantry". A recent village study in Indonesia (Judd, 1980) reports impoverishment for the landless and a growing differentiation in the social and economic groups within the village as a result of the spread of the commercialization of agriculture.

Griffin (1974:90),in his essay on the economic, social, and political implications of the green revolution, notes also that the introduction of tehnological change in Indian agriculture and other rural areas of Asia "...has strengthened the political dominance of landowners and accentuated income inequality". In contrast, Barlett (1982:64) notes that in her village study in Costa Rica the locus of power and leadership has shifted with the introduction of the new technology from residing in the hands of those who control the community's productive resources to those who control relationships with power people outside the community.

b) Land tenure: The position of the numerous small tenants and share-croppers is eroded as a result of sharply rising cash rents and the proportions paid by sharecroppers

(Jacoby 1972:65; Pearse, 1978:197). Ladejinsky (1973:137), commenting on the situation in India, emphasized the tremendous increase in land values (three, four or fivefold). As a result rents have risen from the traditional 50/50 to as high as 70 percent of the crop. He also notes that "...security of tenure and other rights in land a tenant might claim have also been perceptibly weakened". Landowners are increasingly engaged in direct production by taking advantage of mechanised cultivation and the plentiful supply of cheap hired labor (Pearse, 1978:197; Ladejinsky, 1973:137). According to Ladejinsky (1973:137) "...the old squeeze whereby tenants are reduced to share-croppers and eventually to landless workers is being accelerated...".

Griffin (1974:74-5), commenting on evidence whereby landowners were evicting tenants and taking over the land themselves in Sri Lanka, India, Pakistan and the Philippines, pointed out that commercialization will destroy the peasantry as entrepreneurship is increasingly concentrated into a few hands. As a result, the variety of tenure arrangements will tend to disappear and be replaced by owner-operators and agri-businesses.

The impact of a highly unequal access to land has been emphasized in a recent survey done in regions of Malaysia and Indonesia. Gibbons et al (1980:21) report thatdespite the extensive spread of the green revolution among small farmers and the resulting economic growth "<u>there is unequal development</u>". Asthey point out, theobserved unequal development was not the result of "<u>disproportionate access</u>

by bigger farmers to the new technology and to Government Agricultural Aid as has been reported in other studies" (Griffin, 1974; Frankel, 1971 and Ladejinski, 1973), but mainly to "pre-existing, continuing and even increasing structural inequalities in the distribution of farm size and tenure, i.e.in access to agricultural land". They further pointed out that these inequalities were not overcome by the new technology nor by Government Agricultural Aid programs. On the contrary, these factors appear to have aggravated the inequalities.

In contrast, Chaudhry (1980) reported that the green revolution does not seem to promote tenant evictions. Although the green revolution tends to reduce tenant's share of output tenant costs also fall. As a result net tenant incomes have been increasing faster than those of landowners. Chaudhry, also found that between 1960 and 1972 land and income distribution among farmers in Pakistan has become less skewed.

Similarly, Nicholson's (1984:586-7) analysis of data from the State of Punjab, India suggests considerably greater equity in the impact of both the technology and the rural cooperatives than several critics of the green revolution allow. According to Nicholson most scholars of the green revolution have ommitted the effects of population growth on social inequality. Nicholson reports that land distribution patterns measured by the Gini coefficient were inversely correlated with the green revolution. As he points out (1984:572) "...the new technology and rural institutions

slowed down long-term trends toward greater inequality which the dual processes of population growth and commercialization of the rural sector had set in motion".

c) Speculation on land: Epstein (1973:50), points out that inflation in land prices following the introduction of new high-yield crops made investment in land, particularly irrigated land a profitable investment which attracted urban speculators. As she notes, the "...speculative demand gave land prices a further push upwards in a way which the urbanites had anticipated but which impaired the villagers capacity to compete with the wealthier and more knowledgeable townsmen".

d) Employment: Griffin (1974:69-73) notes that under certain conditions the new technology can create employment opportunities and thus reduce income inequality. For example, with irrigation two crops can be harvested from the same field within the year and this will result in increased demand for labor with a concomitant reduction in seasonal unemployment. But with increased inequality in land ownership the prospects for increased employment opportunities for the landless are almost zero.

Griffin (1974:39-45) provided ample evidence from research done in Sri Lanka, Thailand and Indonesia to make the point that yields and employment fall as size of holding increases As he points out (1974:40) "large farmers are using material inputs to replace labour, not land". This has major policy implications since a division of the large farms among several small farmers will result in increasing both

employment and food production. Judd (1980) also reports from her village study in Lombok, Indonesia that the new rice technology decreased overall employment and wages through the increased use of labor-saving devices.

Chaudhri (1974:169) argues that the type of mechanization induced by the green revolution is critical to the employment issue. Large farmers are induced by economic rationality to mechanize the most labor demanding operations e.g., harvesting, threshing during which farm workers earn most of their annual income. Therefore, increased mechanization of those operations has detrimental impacts on the income of casual farm workers. A more recent study (Chaudhry, 1980), done in Pakistan has provided evidence for the promotion of employment opportunities as a result of the spread of green revolution technology.

e) Polarization of social classes and social unrest: The increased deterioration of the economic position of the small farmers, tenants, and share-croppers vis-a-vis large landowners polarized class relationships (Griffin 1974:26) and resulted in social unrest and clashes in several areas where the green revolution has been successfully promoted (Duyker, 1981; Judd, 1980; Wharton 1974:468).

f) Ecological implications: Serious ecological implications were mentioned by a number of scholars as resulting from heavy use of chemical fertilizers and insecticides (Beals 1974:173; Harris 1972:29; Kenmore, 1980), lack of genetic variability in the crops grown (Beals 1974:173; Wharton 1969:468-9), that makes them susceptible to disease

and infestation which will result in massive crop losses.

Given the impacts of the green revolution technology in various "developing" countries, it is interesting to examine the impacts of the technology associated with a particular crop in the structure of agriculture and the economic and social patterns of behavior within the context of a Greek farming community. Two main characteristics that differentiate the Greek case from the rest of the countries where the impacts of the introduction of new technology were studiedneed to be emphasized here.

First, in the case of Greece access to agricultural land was equal thanks to an early expropriation of large farm estates that were distributed to landless farmers. Therefore, structural inequalities in the distribution of land and tenure arrangements were almost non existent at the time of the introduction of the new crop.

Second, the adoption of the new crop along with the technology associated with it was a "crash" type program (Barlett, 1982:147, 174) whereby farmers had to adopt new methods, credit machinery. buildings in one large package. The only choice farmers had over the new agricultural technology for a piecemeal adoption was the number of hectares to be planted in the new crop --which anyway was restricted by the government through quotas in effect from 1971 to 1981.

1.3 Farm Household Decision Making

Despite the lack of structural inequalities in Greek agriculture in terms of farmers' access to land and credit, it will be incorrect to regard the village under study or any other village in Greece or elsewhere as composed of a group of "average farmers" and a few "progressive farmers". Moreover, farmers facingthe choice of a new crop highly intensive with regard to labor and capital resources are expected to respond differently. Therefore, it is interesting to examine the patterns of farmer's decisions and the variables that can be used to understand them. As Barlett (1982:2-3) points out "...the production decisions of each household can be examined to understand the micro-level choice process that makes up the larger macro-level changes".

Production strategies of farmers has become a subject of considerable scholarly research in the 70s. An increasing awareness of the failure of the green revolution to improve the living conditions of the poor in most rural areas of the world has led to research endeavors aimed at understanding the agricultural decisions of small farmers. The vast literature produced, mostly by anthropologists, has been reviewed by several scholars (Barlett, 1980, 1980a; Netting, 1974) and we do not intend to repeat it here. Instead, we will focus on the main lines of inquiry brought about by the numerous studies carried out in a vast array of agroclimatic conditions and subsistence and market oriented farming communities.

We also avoid the substantivist and formalist controversy that led to non-ending theoretical debates and deprived economic anthropology from providing better insights into the processes of sociocultural change in farming communities Recent research (Barlett, 1982; DeWalt, 1979 and Greenwood, 1976), transcends this controversy by incorporating in one methodology substantivist and formalist perspectives. As Bennett (1967:452) points out, there is considerable interplay between the local and the external, the microcosm and the macrocosm.

Most research on agricultural decision making uses the household as the unit of analysis. The agricultural household is the unit of production and consumption and these two entities help to understand the agricultural choices made. Agricultural households can get access to resources such as land, labor, credit, information and have needs and desires such as food, clothing, education for their young members. and other consumption items and services.

Access to resources and satisfaction of needs are conditioned by the social milieu where the household finds itself. Therefore, in studying the adaptive production strategies of farmers one cannot ignore the constraints imposed upon the decision makers by the macrolevel factors. Barlett (1980:550) classifies those factors into two aspects:

- the **natural environment** (altitude, rainfall, temperature, incidence of wind, potential for wells and irrigation, insects and diseases. soil type, etc).

- the social, political, economic, and institutional environment (transportation facilities, marketing mechanisms, price structures, governmental policies)

Bennett (1980) and Bennett and Kobl (1982, 1982a) elaborating on Chayanov's "cycle of family size" view the household and the farm enterprise as a complementary social system with two competing and reinforcing subsystems. According to them production goals and household maintenance goals are continously traded-off As they pointed out (1982:115), household needs and those of the farm "...move like concentric wheels in a Mayan calendar, intersecting at different, and not always fortunate, points. For example, children may reach an "expensive" stage of growth at the very time when the enterprise is in need of capital".

Bennett and Kobl (1982a:128-47). use the term of "agri-family system" to encompass under one model the concepts of the "nuclear family household" and the "enterprise" with those of the surrounding social milieu (the "community" and the "national structure"). Using this model they view decision making as a "...behavioral adaptation, characterized by the constant interplay between the household and the kinship extensions of this group with the economic entity of farm or ranch, and with decisions mediated by the larger economic events and institutions of the national structure".

Netting (1974) also aknowledges the complexity of agricultural decisions since they involve environmental appraisal, knowledge of techniques, experience with crops, consumption needs, market possibilities, and the fund of

capital, labor, and land mustered by the cultivator. Using an ecological perspective, Netting (1974:43) points out that if all those variables "...can be related, even in a preliminary fashion, it will be possible to approximate more closely both the nature of energy flows in the agricultural ecosystem and the factors influencing a farmer's decisions".

In summary, a better understanding of farmer's production strategies can be reached through a close examination of factors related to the environment; to the social, political and economic milieu; to access to resources (land, capital, and labor); to life-cycle events; and to technical and managerial skills of farmers. In the proposed study we will try to relate all those diverse factors in order to explain crop production patterns adhered to by the agricultural households.

2. Methods and Procedures

2.1 Collection of Data

The methodological approach to this study employs both quantitative and qualitative research techniques. A basic framework of information about households, village structure, and agricultural patterns were obtained from a general household survey. Qualitative data were derived from focused interviews with selected persons and families in the village and through quasi-participant observation.

The integration of formal survey and less structured field interviewing procedures is intended to broader our

perspective about the changing situation. As Greenwood (1980) has convincingly argued in his paper on the methodology of community-level research, statistical aggregations of data do not easily produce explanations of people's behavior. Survey type data can provide few clues about causes. Therefore, some combination of behavioral and statistical baseline data is needed. Sieber (1973:1335) has also emphasized the advantages to be gained from a methodological pluralism. As he pointed out "each method can be greatly strengthened by appealing to the unique qualities of the other".

The starting point was to gather data about the village as a collectivity (community). The local Municipal Office, as do other Municipal Offices across the country, retains a file of information relevant to this. Some of these records are collected for national statistical purposes and others as a by-product of the administrative function performed by the local government. The secretary and her assistant ("Klitiras") were key persons in providing the documents needed and for updating the information included in those documents. Specific information sought at this stage included population trends, vital and migration statistics, list of households, land ownership data, agricultural statistics (crops, livestock, machinery, etc.), and matters relating to the history of this village.

Local and district agencies and organizations provided some unpublished data, very useful to the present study. These agencies accumulate data as a matter of record keeping

and through requirements of law. The officer of the local cooperative provided data on households that belonged to the local cooperative (area farmed, loans received, off-farm employment, etc). The office of the Tobacco Board at Yiannitsa[1] provided longitudinal data on the area and production of tobacco, yields, production cost, and the number of tobacco operations in Agios Loukas. The local Extension Office at Kria Vrissi provided recent data on livestock, and data on production cost for a number of crops surveyed in 1983. The Irrigation Board at Kariotissa and Akrolimni proved to be a very useful source of reliable longitudinal data on area planted to various crops within the boundaries of Agios Loukas.

Data on individual farm operations enumerated during the 1981 census of agriculture were obtained from the National Statistical Service. This information was valuable in two ways. Firstly, it was useful to expand the longitudinal data already published for the village for the 1961 and 1971 censuses of agriculture. Results of the 1981 census of agriculture were not yet available (and they are not expected to be available prior to 1985). Secondly, it provided detailed quantitative evidence on a farm by farm basis for the study of local heterogeneity (Dewalt, 1979; Greenwood, 1976, 1980).

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(1) According to Korsching (1981:22) in studies dealing with changes in the structure of agriculture "longitudinal data are necessary primarily to determine what is changing consistencies --through time-- in the variables that are changing, and causal relationships among the variables".

The data from the 1981 census of agriculture includes: type and area of crops under cultivation; livestock; area owned and irrigated; gender, age and total number of days the members ofeach farm household worked on the family farm, other farms and in off-farm work; and machinery owned and used.

Focused interviews were conducted with local political leaders holding positions in the municipal council and the village cooperative, agricultural extension agents. agricultural bank officers, and officers of the National Tobacco Board. These interviews dealt with the introduction of tobacco as a crop and its impacts upon the structure of agriculture in the village and in the Yiannitsa area.

In-depth interviews were also conducted with two groups of farmers. Tobacco growers, both small and large scale. were asked to provide information on the particular problems they were facing, reasons for converting to tobacco production, how tobacco compares to other crops in terms of income and profit generating capacity, whether they plan to further expand their acreage, and how they perceive the future of burley tobacco. Non-tobacco growers were asked to provide reasons for their preference for other crops and whether they were planning to shift to tobacco in the near future.

Some of the main themes brought up in interviews with village and agency leaders were pursued further in discussions with selected farmers and with men who congregated in the coffee houses and cafeterias of the

village. As an important part of the social structure of the Greek village (Sanders, I.T., 1962; Photiadis, J.D.. 1965), the coffee house was used extensively as a setting for informal interviews and participant observation. Visits to farmers in the fields and in the curing barns were also made for further quasi-participant observation and focused discussion.

Finally, we tried throughout the fieldwork to collect information about the technical, institutional and market conditions that affect the relative availability of the different factors of production. This type of information was very crucial in understanding the production decisions made by farmers in Agios Loukas.

Information derived from fieldwork activities was recorded on a specially designed form immediately after leaving the situation Key words were specified for indexing purposes and data retrieval (Strauss et al, 1969:69-76).

2.2 Analysis of Data

Data for each agricultural operation enumerated during the 1981 census were coded and transfered to computer cards. An SPSS program was used for data analysis. Frequency distributions, along with means, medians and other measures of central tendency and dispersion were obtained during the first stage of analysis. Results obtained during this stage were used to construct tables comparing the 1981 census of agriculture with those of 1961 and 1971. Data derived from

documentary research were also used to construct tables and diagrams to supplement the census data.

Analysis of the documentary and census data provided useful insights into changes in the structure of agriculture as it evolved during the last thirty years and especially after the introduction of tobacco. Cross tabulations were made to provide clues on possible associations between farm related variables (for example, whether there is an association between possession of a tractor and size of the operation in terms of land ownership and control of land, hectares of tobacco planted, etc).

Finally, taking heterogeneity into account, we were able to integrate fieldwork data and the socio-economic census in order to derive a number of farm typologies. These types of farming enterprises appear to differ substantially in terms of land ownership, scale of operation, enterprize combination, degree of mechanization, etc. The efficiency of this classification was tested using the technique of discriminant analysis. This stage of analysis was very crucial to the study since as Greenwood (1980:41) pointed out: "Until the field researcher has at least a preliminary handle of the significant local heterogeneity, there is little more that can be usefully done in the study".

Field notes on interviews with key informants and farmers, and from participant observation were used to construct a history of the village and its agriculture. The notes also were used to trace the introduction of burley tobacco and to ascertain how farmers perceived changes that

tookplace in the economic and social life of the village.

In addition, data on the farmer's point of view and fieldwork data (emic approach), have provided the ethnographic context for the interpretation of survey results. Further, several statements made by informants were treated as hypotheses and were systematically investigated (etic approach).

The usage of "emic-etic distinction" follows Harris (1968), who considers emic data as information that reflects the cognitive orientation of the people studied and uses their own units and categories for description. Etic data are objectively verifiable by an outside observer and are measured in units decided upon by the observer (Harris, 1968:50).

III. GREEK AGRICULTURE: STRUCTURE AND CHANGE

Before going into the detailed analysis of the changes brought about in Agios loukas, following the introduction of burley tobacco, it is useful to take a look at the major developments in Greek agriculture, especially after the end of World War II.

1. Postwar Changes in Greek Agriculture

Greece's land area is about 132 thousand square kilometers, or 50,962 square miles about the size of New York State. About 30 percent of the land is used for crops, 40 percent for pastures, 20 percent for forests, and the remaining 10 percent for cities, infrastructure and waste (Table B-1).

Agricultural resources vary widely from fertile irrigated, alluvial plains --former marshes and swamps-- to highly eroded hills and rough isolated mountainous areas of very low productive potential. About four hundred thousand hectares of the latter land have been turned into grassland during the past twenty five years, as thousands of people fled these mountainous areas (Table B-1).

Similarly, the climate varies from the Mediterranean weather of Southern Greece and the islands with hot and dry summers and rainy winters to the continental climate of the

North with rainy winters and freezing temperatures. This weather variability allows for the cultivation of a large array of crops. In the warmer regions of the country olives, citrus, figs, grapes, currants, appricots, out of season vegitables, as well as winter grains are the main crops cultivated. The northern region produces large quantities of small grains and corn oriental and burley tobacco, cotton, sugar beets, deciduous fruits, canning tomatoes, rice, hay, legumes and table grapes.

Since precipitation is unevenly distributed throughout the year, and most of it falls when it is least needed, great efforts were placed on providing irrigation water. According to a U.S. Department of Agriculture report (1975:42), only 178,000 and 270,000 hectares were irrigated in 1929 and 1939, respectively. During that period the government's main concern was drainage and flood protection.

Large projects aimed at bringing more land under irrigation were started during the 50s. By 1961, 489 thousand hectares or 13.3 percent of all farmland was irrigated. Seventeen years later irrigated land was almost doubled, reaching 883.3 thousand hectares or 27.3 percent of all farmland (Table 3). A significant part of the overall increase of the agricultural product in the 1960s and 1970s is attributed to successful efforts of bringing more arid land under irrigation.

Further efforts to irrigate more land will be more difficult than in the past, due to the large investment needed, coupled with the limited public assets presently

Table 3. Number of Farms, Farm Size, and Irrigated Land: Greece, 1950, 1961, 1971, and 1977/78 (1)

	1950	1961	1971	1977/78
Number of farms (1,000)	1,006.9	1,140.2*	1,036.6*	949.75*
Percent of change over the previous census	-	13.2	-9.1	-8.4
Total area (1,000 ha)	3,605	3,673	3,586	3,227 (2)
Average size (ha)	3.6	3.2	3.5	3.4
Change over the previous census (%)	-	-12.5	8.6	-2.9
Average number of parcels	6.6	7.1	6.5	6.1
Irrigated land (1,000 ha)	na	489.0	733.7	883.3
Percent irrigated	na	13.3	20.5	27.3

SOURCE: (a) N.S.S.G. Statistical Yearbook of Greece, 1970, 1975, and 1981, Athens: National Printing Office

(b) -------- Results of the 1950 Census of Agriculture, Athens: National Printing Office

(1) data for 1977/78 were derived from a 10 percent national sample survey of farms

(2) cultivated area only

(*) excluding 16,009 for 1961, 10,660 for 1971 and 7,290 for 1977/78 farms with livestock only

na = not available

available for such long term investments.[1] It is estimated that at least one third of the presently cultivated land can be irrigated.

Following World War II and its aftermath (civil war), enormous efforts were devoted toward the development of Greek agriculture. According to Myrick and Witucki (1970:58) "wartime destruction and disorganization left agricultural output in 1945 far below prewar levels" (1935-1938). The development path chosen by Greece was similar to that being followed by many other countries, that is, through increasing the level of inputs. The use of fertilizers, insecticides and pesticides, new high yielding varieties, more machinery and new farm practices expanded tremendously.

The total amount of fertilizer applied in 1965 was ten times the 25,927 tons applied, on the average, during 1933-37 period. By 1977 the use of fertilizers had doubled reaching 503.8 thousand metric tons (Table B-2). There were 700 tractors operating in 1930, 9,000 by 1955, 24,553 by 1962, 102,320 by 1970 and 181,600 by 1977. This was an increase of 25,843 percent over the entire 1930-1977 period.

Data on inputs used in Greek agriculture for the period 1948-50 to 1965-67 (Table 4) showed that capital inputs exhibited the highest annual growth rates, 6.3 percent, for the entire period. For capital inputs, the use of fertilizers exhibited the highest annual growth rate, 11.3 percent, followed by feed and seed (6.4 percent) and machinery (5.8

(1) Since 1972, irrigation projects have been at the expense of the government.

Table 4. Distribution and Growth Rates of Inputs Used in Greek Agriculture, Averages for Selected Years.

Inputs	Period: 1948-50	1952-54	1957-59	1961-63	1965-67	Growth Rates 1948-50 to 1965-67
Land	15.5	16.2	15.6	15.1	14.2	1.3
Labor	65.0	60.7	56.4	53.9	47.5	0.3
Capital:	19.5	23.1	27.9	31.0	38.3	6.3
Fertilizer	1.3	2.3	3.3	3.9	5.5	11.3
Machinery	1.7	1.6	1.8	2.3	3.0	5.8
Feed & seed	11.1	13.1	16.0	17.9	22.0	6.4
Other capital	5.4	6.1	6.8	6.9	7.8	4.3
Total inputs	100.0	100.0	100.0	100.0	100.0	2.1

SOURCE: D.C. Myrick and L.A. Witucki. 1971. **How Greece Developed Its Agriculture.** Washington, D.C.: USDA, Economic Research Service Report, No 67. Pp 33

----------. 1970. " Chapter V. Greece: Development With Low Population Growth". Pp 60. In U.S.D.A **Economic Progress of Agriculture in Developing Nations** 1950-68. Washington, D.C.: Foreign Agricultural Economic Report, No 59

percent). Inputs of the other two production factors grew much more slowly (1.3 percent for land and 0.3percent for labor). As a result their contribution to total agricultural inputs dropped from 15.5 percent for land and 65.0 percent for labor in 1948-50 to 14.2 percent and 47.5 percent, respectively, in 1965-67. If the growth rates continue in the period ahead (1968-1983), it is very probable that by now capital inputs have surpassed labor inputs in the making of agricultural inputs utilized in Greek agriculture.

As a result of that technology, suported by the credit of the state-owned agricultural bank and the informational

and educational network created through the establishment of the Extension Service (1953), enormous increases in production were achieved (Table 5). During the early 1960s the country was able, for the first time since ancient times, to become self-sufficient in wheat, the main staple food for the majority of the people (Table B-3). Thereafter, over-production in wheat was maintained, despite reductions in acreage and drastic curtailments in the policy set up to promote wheat production

At the same time new commodities appeared in the agricultural exports of the country (cotton, peaches, canning tomatoes, fresh and processed vegetables, etc), in addition to the traditional exports of raisins, tobacco, citrus, fruits, dried figs, olives and olive oil. Sugar production started in the early 1960s, and within 10 years self-sufficiency was achieved.

For all commodities except some coarse grains, self-sufficiency was attained at higher levels as per capita consumption increased throughout the post war period. Only in meat production, despite significant increases in production (production of meat in 1975-77 rose 4.8 times the prewar production of 1933-37), self-sufficiency remained at prewar levels (around 84 percent). For some meat products, notably sheep/goat meat, and milk, self-sufficiency dropped due to significant decreases in the sheep-goat flocks, as shepherds were increasingly more difficult to recruit, even within the younger generatios of traditional shepherd families. Recent statistics (1980-82) revealed a slight increase

Table 5. Production of Selected Agricultural Commodities: Greece, Averages 1933-37, 1947-49, 1965-67, 1975-77, and 1980-82

Commodity	1933-37	1947-49	1965-67	1975-77	1980-82
Wheat	712.1	739	2,009	2,087	2.896
Rice (milled)	1.3	na	58	55	81.3
Barley	198.4	na	558	840	861
Corn	256.9	na	279	496	1,322
Oats	112.4	na	157	98	na
Rye	59.3	na	15	7	na
Potatoes	129.6	na	549	970	955
Tomatoes	na	na	501	1,304	2,025
Oranges	43.4	na	373.1	570.5	616.7
Lemons	*	na	146.3	193.8	183.7
Peaches	-	na	133	325	428
Table grapes	74.8	117.3	183.4	222	278
Dried grapes	na	na	172.8	147.0	na
Grapes for wine	na	na	591.8	661.1	na
Meat (total)	101.1	10.8	236.4	480.2	519.4
beef/veal	14.6	na	70.2	123.3	94.7
Sheep/goat	61.4	na	81.9	118.4	120.0
Pork	12.2	17.3	48.0	111.6	151.5
Poultry	11.7	na	33.9	118.6	148.9
Milk	268.8	na (1)	1,188.2	1,687.9	1,707.4
Olive oil	115.2	103.3	195	226	291
Vegetable oils	6.1	na	24.3	46.0	na
Sugar	-	-	113.7	329.3	na
Cotton (lint)	12.1	39.3	93.7	124.0	118.6
Tobacco (farm weight)	58.6	43.3	114.7	127.0	123.3

SOURCE: (a) U.S.D.A. 1982. **Selected Agricultural Statistics ofGreece,1965-77,Statistical Bulletin** No 675, Washington, D.C.

(b) Whipple, C. E. 1944."The Agriculture of Greece", **Foreign Agriculture**, Vol.8(4):89,91,93

(c) Agrotiki Trapeza tes Hellados (Agricultural Bank of Greece). 1982. **Ekthesi Ergasion tes Agrotikis Trapezas** (1982 Report of Activities of the Agricultural Bank), Athens Pp 22-23 (in Greek)

(1) 1948-49 average

(*) included in oranges

in sheep/goat meat production, but a significant decrease (23.2 percent over the 1975-77 period) in the production of beef and veal meat.

Despite the tremendous increases in corn production (166.5 percent over the 1975-77 figure), which is mostly used for animal feed, beef/veal meat production was unable to respond to the increased demand brought about by the increasing standards of living. During the period 1975-77 to 1980-82, the 8.2 percent increase in the overall production of meat was obtained mainly through increases in pork and poultry production (Table 5).

It would appear that the policy encouraging beef/veal production through specialized dairy farms has not been successful. Instead, production through mixed type family farms mightbe more successful, since investmentsneededare much lower than those required for specialized dairy farms. Of course farmers should be persuaded to resume livestock production as part of their activities. Implementation of such a policy would be a very difficult task for the Extension Service, since farmers perceive the disadvantages associated with such a shift as outweighting the advantages offered.

Production of certain commodities over the potential of the country's internal market is not free of bottlenecks in the disposal of the produce. For perishable commodities like peaches, apples, tomatoes , oranges etc., unsuccessful marketing of the produce, mainly on foreign markets due to increased competition from other countries, leaves the

country with huge quantities that cannot be processed by fruit processing plants.

Every year tens of thousands of tons are buried at public expense. At the same time, other agricultural products in deficit production have to be imported, although they could be produced in the country. With the great number of producers and their present inability to control the marketing of their products, makes any rational programming of acreage devoted to certain crops an unattainable dream.

Today, agriculture's prosperity is highly dependent upon the expansion of foreign markets, rather than on the potential of the internal market. Greece's accession in the EEC is expected to affect, through the pricing mechanismsof the Common Agricultural Policy, the commodity structure of its agriculture.

Althoughthere were prophecies of doom aboutthefuture prosperity of the country's agriculture, as a result of the Common Agricultural Policy which favors the products of the Northern European countries, the general mood is optimistic. Actually, Greece is once again dependent on agriculture. The first time (1950-1970) occured when the exchange, earned by agriculture, financed the industrial build up of the country. Today agriculture is expected to ease some of the financial problems which are expected to arise due to the low competitive position of its industry, vis-à-vis the industrial sector of the highly developed EEC countries.

Production orientation has also changed throughout the post war era. Starting from the plains area, production for

the market became the main production goal of most farms. As transportation gradually improved, other more remote areas started losing their subsistence orientation in agricultural production.

During the 60s, substantial regional specialization was taking place. Today it is obvious that certain regions of the country are almost exclusively occupied with the production of certain commodities; tree fruits and especially peaches in the triangle of Skydra, Naoussa and Veria in Northern Greece; wheat and other grains in Thessaly; early season vegetables (tomatoes and cucumbers) on the island of Crete; etc.

Without any increases in the land base, agricultural output grew tremendously as a result of increases in the levels of inputs used (machinery, high yielding varieties, irrigation works and better farm practices, fertilizers and insecticides). During the period 1947-49 to 1965-67, gross agricultural output increased at an annual rate of 4.9 percent, doubling every 14 years (Shaw, L., 1969:50-51). The highest rate of growth in gross agricultural output (7.8 percentannually) was achieved during 1960-65 (Table B-4).

Thereafter, annual rates of growth in the agricultural sector were much slower than industry and services. Even negative rates of growth (-1.1 percent) were evidenced during 1975-79 (Table B-4). Those losses were recovered in the subsequent period of 1979-1982, when gross agricultural output grew at an annual rate of 4.5 percent. With industry and services exhibiting no growth at all (0.01 percent),

Table 6. Contribution of Agriculture, Industries, and Services in the Formation of Gross Domestic Product and National Incomein Greece. Selected Years (1)

Sector	1958*	1960*	1965*	1970*	1975**	1980**
Primary sector	29.8	24.4	22.8	17.8	16.3	14.0
Agriculture	27.9	22.6	21.4	16.8	15.6	13.4
Forestry	1.2	1.1	0.7	0.4	0.4	0.3
Fisheries	0.7	0.7	0.7	0.5	0.4	0.3
Manufacturing	25.9	26.0	27.8	33.1	30.9	31.8
Services	42.4	47.3	46.6	46.4	50.6	51.8
GROSS DOMESTIC PRODUCT	98.1	97.7	97.2	97.3	97.8	97.6
Net income from abroad	1.9	2.3	2.8	2.7	2.2	2.4
NATIONAL INCOME	100.0	100.0	100.0	100.0	100.0	100.0

SOURCE: N.S.S.G. Statistical Yearbook of Greece, 1966, 1970, 1979, 1981. Athens: National Printing Office

(*) at 1958 prices
(**) at 1970 prices

(1) data for 1980 are subject to revision

agriculture was the only sector that contributed to the 0.6 percent growth of the gross domestic product --the lowest growth ever recorded in Greece during the postwar period.

The higher annual growth rates of industry and services achieved during the period 1960-1979 resulted in lowering the contribution of the agricultural sector in the formation of the gross domestic product. Agriculture's share dropped from 29.8 percent of the gross domestic product in 1958 to 14.0 percent in 1980 (Tables 6 and B-5). Similar dramatic changes were evidenced in the making of Greek exports. While

agricultural products accounted for 78.6 percent of all Greek exports in 1964-66, their share dropped to 32.4 percent in 1978-80 (Table B-6). Greece can no longer be considered as a country exporting mainly agricultural products.

As a source of employment, agriculture provided more than half of the jobs until the mid-1960s. Actually, during the 50s, persons engaged in agriculture increased at an annual rate of 3.7 percent, reaching 1.96 million persons by March 1971 or 53.9 percent of the total active population (Table B-7). The trend was completely reversed during the 1960s when most of the farming areas of the country exhibited high migration losses in their productive population. By 1971, only 1.3 million persons, or 40.6 percent of the economically active population, were recorded as employed in the agricultural sector, a 3.9 percent annual decline over the previous census of 1961 (Table B-7).

The agricultural labor force also grew older, as those who left farming were younger. Younger age cohorts in the agricultural labor force declined to the 30-34 year cohort throughout the 1951-1971 period, and increased in all subsequent age cohorts. As a result, the median age of those engaged in agriculture was increased by 9 years (33.74 years in 1951 as compared to 42.77 years in 1971). The same trend was expected to continue during the 70s, resulting in an older working force of probably less than one million persons. The actual size of the decline is not yet known, as the results of the 1981 census have not yet been published.

Another indication of the expected trend during the

Table 7. Farm Operators by Age in Greece, 1971 and 1977/78

Age groupings (years)	1971 census*		1977/78 survey	
	Number	%	Number	%
Up to 14	460	0.1	60	0.01
15 – 24	9,760	1.0	1,890	0.2
25 – 44	340,520	33.6	217,130	22.7
45 – 64	456,680	45.1	451,890	47.2
65 and over	204,820	20.2	285,500	29.9
Total	1,012,240	100.0	956,470	100.0
Not reporting age	35,020	3.5	570	0.1
Total	1,047,260		957,040	
Median age	51.8 years		56.5 years	

SOURCE: N.S.S.G. Statistical Yearbook of Greece, 1978, 1980 Athens: National Printing Office

(*) 5 percent sample elaboration

70s is provided by the data on agricultural operations recorded by the 1977/78 national survey of agriculture. Within a seven-year period those who operate the the Greek farms grew older by 4.7 years (median age 56.5 years in 1977/78 as compared to 51.8 years in 1971), and were less by 8.6 percent (Table 7). The agricultural population fell 18.6 percent between 1961-1971 (Table B-8) to 3.7 million in 1977, or 39.7 percent of the total population, compared to 53.9 percent in 1961 and 64.5 percent in 1948 (Myrick and Witucki, 1971:36).

Commercialization of Greek agriculture has not brought

about concentration of land ownership. Greek farms are small in terms of physical area, gross value of product, or capitalization[1]. With regard to physical area, the only characteristic recorded in the agricultural censuses, shows that average farm size has not increased throughout the period 1929 to 1978. On the contrary, in 1977/78 it was 9.8 percent less than the 1929 figure. In 1929 the average size of farms in Greece was 3.77 hectares (Myrick and Witucki, 1971:26), which dropped to 3.6 hectares in 1950 and to 3.2 hectares in 1961, a 15.1 percent decrease over the entire period 1929-1961 (Table 3). By 1971, after a decade of massive exodus of rural and mostly agricultural people, the average size of farms increased by 9.4 percent, reaching 3.5 hectares --still 7.1 percent lower than the 1929 average farm size.

The constitution of 1952 limited the maximum size of farmland owned to 30 hectares, and during the 50s several large farms, owned mainly by the Church and Monasteries, were expropriated and distributed to landless farmers. This

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(1) Although average size, in terms of physical area, has not increased throughout the post war period, it is probable that significant increases took place in terms of the average value of product and/or average capital employed. Data on the composition of inputs used (Table 4) provide strong evidence in support of such a trend. In terms of the average gross value of product, data on the gross agricultural product per agricultural worker (Table B-9) show that output per worker increased 3.6 times between 1950 and 1970. This productivity gain in agriculture was lower than the productivity gain of the nonagricultural sector. As a result, the productivity gap between agricultural and nonagricultural sectors became quite pronounced in Greece. The ratio of per capita GAP to per capita GDP has changed from 1 to 2 in 1950 to 1 to 4 in 1970.

Table 8. Number and Area of Agricultural Operations by Size, Greece, 1950, 1961, 1971, 1977/78, Percentages.

Size of operations (hectares)	Number of operations				Area of operations			
	1950	1961	1971	1977/78	1950	1961	1971	1977/78
Up to 1.0	28.0	23.0	21.8	23.0	6.0	3.6	3.1	3.2
1.1 - 4.9	57.0	57.8	57.3	54.7	43.0	45.1	41.7	37.7
5.0 - 9.9	11.0	15.1	15.8	15.8	22.0	31.1	30.5	29.1
10.0-19.9	3.0	3.4	4.1	5.0	10.0	13.6	15.4	17.7
20.0 @ over	1.0	0.7	1.0	1.5	19.0	6.6	9.3	12.3
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

SOURCE: (a) N.S.S.G. Statistical Yearbook of Greece. Athens: National Printing Office, Annual Series

(b) ------ Results of the 1950 Census of Agriculture Athens: National Printing office

might have been the main factor causing the increase in the total number of farms in 1961 by 13.2 percent, as compared to 1961 (Table 3), and decreasing the share of farms of over 20 hectares to total farmland from 19.0 percent to only 6.6 percent of the total area by 1961 (Table 5).

Thereafter, farms of 10 hectares and over increased their share in the total number of farms and area farmed, while those of less than 5.0 hectares declined. Farms of 5.0 to 9.9 hectares remained relatively stable in terms of their share in the total number of farms and area farmed (Table 8)

Lianos (1981) emphasized the role of the State in impeding the concentration of capital in agriculture. According to Lianos, the investments of the State in infrastructure (dams and irrigation, drainage works, clearance of new fields etc) have prevented the concentration of capital that would otherwise be needed to

undertake such projects. Instead as Lianos pointed out (1981:20) "...the concentration of capital in agriculture takes the forms of intensive cultivations on private lands and of public investments in agricultural capital". In addition, Lianos pointed out other factors that have prevented the concentration and centralization of capital in agriculture --the high "malleability" of landed capital (various crops, rental to other farmers); the ability of farmers to supplement their income with off-farm employment.

The smaller farm size is further complicated by the fragmentation of holdings. In 1977/78, the average farm was divided into 6.1 separate plots (Table 3), each having an area of .6 hectares (1.3 acres) --not much improved since the 6.6 parcels of 1950, averaging .55 hectares each.

The smaller farm size, coupled with fragmentation, is blamed for higher costs and lower efficiency levels of Greek agriculture. Myrick and Witucki (1971:27-28), based on Thomson's research (1963), associate fragmentation with:

- additional time requirements for moving from field to field
- reduced productive working time in each field
- limiting adoption of crops requiring frequent attention
- impeding adoption of new technology, such as irrigation wells and drainage, mechanization, etc.
- loss of a high proportion of land in field boundaries
- frequent disputes over alleged or actual trespass

A number of factors are associated with fragmentation, inheritance and dowry customs being the prime factors. Under

the Greek civil code, there are no restrictions on the division of farmland. In addition, as Myrick and Witucki (1971:28) pointed out, "Heirs tend to want to share in all grades of land and in lands planted to perennial crops"[1].

The State also held the same sentiments during the settlement of refugees and other landless farmers. Instead of giving one plot to each family, the settlement committee gave farmers several plots --one plot within each one of the several categories of land, classified in fertility terms.

Scarcity of land and unattractive investments in industry and commerce --the stockmarket is in a state of chronic downtrend-- bring urban investors eager to buy any piece of land a farmer is willing to sell by dividing his property.

Contrary to widely held beliefs that small and fragmented farms impede productivity in Greek agriculture, Shaw's work (1969) provided strong evidence for a reverse association. The coefficients obtained for production units, dominated by small size operations, net of the effect of other variables, were highly significant, indicating that small size operations have higher productivity than operations with relatively large units. Therefore, Shaw (1969:379) concluded that "...small size units in Greek agriculture have not served as deterrent for growth in production". As far as fragmentation is concerned, Shaw (1969:380) pointed out that:

"While it appears obvious that scattered holdings of

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(1) Perennial crops are also excluded from land consolidation projects carried out by the Service of Topography of the Ministry of Agriculture.

> the order of those in Greece hinder productivity increase, there has been no indication of the relationship".

Also Forbes' research (1976:236-250) in the peninsula of Methana has shown that at least in some cases scattered land holdings and polycroping promote diversity and stability. Forbes research based on an ecological model has found evidence to support the claim that although production per man-hour is lower in a diversified system of this type as compared to non-diversified modern systems, nevertheless it produces arelatively stable return despite fluctuation in weather conditions. Forbes sees this loss of per-man efficiency "...as an "insurance premium", paid to ensure a reasonable supply of food, even in unfavorable years".

In summary, the major trends in Greek agriculture throughout the last 35 years were: a decreasing contribution in the formation of gross domestic product and the making of the country's exports; smaller and older working force as compared with the national labor force; increased regional specialization and production for market rather than subsistence production; persistence of small fragmented farms with no gains towards increasing the scale of operation; tremendous increases in the use of agricultural technology (tractors and machinery, fertilizers, insecticides/pesticides, high yielding varieties, etc); inbalanced production with over production of certain crops and under production of others; and increased dependability on foreign markets rather than on the internal market for the disposal of its products.

2. Introduction of Burley Tobacco to Greek Agriculture

Burley tobacco was introduced into Greek agriculture in 1960 when 4.2 hectares were planted, on an experimental basis, by the Greek Tobacco Institute (Sfikas, 1973:477). This planting produced the first commercial quantity (8,164 kg) of Greek burley (Akehurst. 1968:209). Seven tenths of an hectare of the total 4.2 hectares were planted by an agronomist named Protopapas on his farm in the area of Veria, a few miles from Agios Loukas. According to Akehurst (1968:209) "the industry was started with West German support and that country has been taking over 70 per cent of the exports".

In 1961, the Greek Tobacco Board established three production centers in Karditsomagoula (District of Karditsa), Pirgetos (District of Larissa) and Katerini (District of Pieria). In 1962 burley came to the neighboring area of Alexandria (District of Veria), and in 1964 it was introduced in the area of Yiannitsa. In 1963 the Greek Ministry of Agriculture included burley tobacco in the set of data collected on the mean weighted prices received by farmers for various crops cultivated each year.

Foreign tobacco companies, as mentioned earlier, mainly from West Germany, were responsible for the promotion of the new crop and with the provision of technical assistance to interested farmers who had to sign a contract with them. Several of the companies, especially Intertab S.A., were

Table 9. Tobacco Companies Engaged in Burley Tobacco Production and/or Marketing Through Signed Contracts With Tobacco Growers, Greece, 1967.

Companies	Direct production		Grower's contracts		Total	
	Hectares	%	Hectares	%	Hectares	%
Intertab S.A.	223	18.5	984	81.5	1,207	100.0
International S.A.	-	-	780	100.0	780	100.0
Gretoba S.A.	65	11.3	508	88.7	573	100.0
Europaiki S.A.	-	-	275	100.0	275	100.0
Gleoudis Nick	-	-	204	100.0	204	100.0
Austro-Hellenic S.A.	69	35.0	128	65.0	197	100.0
Other Companies	27	4.3	594	95.7	621	100.0
Independent Growers	129	100.0	-	-	129	100.0
Total	513	12.9	3,473	87.1	3,986	100.0

SOURCE: "Kapniki Epitheorissis" (Tobacco Review). No 250, September, (1967):5381 (in Greek)

also involved in direct tobacco production on rented land (Table 9) --the first time such an activity was carried in Greece by a foreign company. This production scheme was followed until 1971 and the production of burley tobacco rose very quickly to 13.3 thousand metric tons in 1970.

As a product exclusively for export, burley tobacco is highly affected by fluctuations in the world market and prices and export subsidies paid to foreign burley tobacco growers. In the beginning the Greek burley crop was produced for export, principally to West Germany, where it entered duty free (Table 10).

In 1971, Greek exports of burley tobacco to West Germany suffered severe set-backs due to increased competition from Italy. In 1970 the EEC countries initiated a common

policy for tobacco produced in member states. As a result of this policy the Italian burley crop in 1971 received 67.3 cents per kilogram in subsidies, and thus it became cheaper than Greek tobacco on the world market, especially on the EEC market. Increased exports to other countries (Egypt and Eastern European countries) could not offset the decline in exports to West Germany. which in 1970 amounted to 500 tons or 8.8 percent of all exports, compared to 3,700 tons in 1969 and 4,600 tons in 1968 (50.0 percent and 73.0 percent. respectively, of all Greek burley exports).

This surplus generated substantial delays in the marketing of the crop. Farmers were discouraged from planting burley and the government abolished the signing of contracts with tobacco companies and stepped in through the National Tobacco Board to allocate subsidies to farmers, buy the unmarketed product for guaranteed minimum prices, and distribute allotments to qualified growers. As a result, production fell in the next four years and it was only by 1976 that the area planted with burley increased again, by 295 hectares or 5.6 percent over the 1971 area (Table 11).

When Greece joined the EEC countries in 1981 as the tenth member state, the allotment program was abolished and the Greek burley crop started receiving subsidies determined by the Common Agricultural Policy of the EEC countries. EEC countries are not self-sufficient in burley tobacco, and, therefore, there is a market for a larger crop if the prices offered continue to be favorable for farmers. During the last three years the area under burley tobacco expanded

Table 10. Exports of Greek Burley Tobacco in Specified Countries, 1967-1982.

Year	West Germany	Other E.E.C.	U.S.A.	Egypt	Eastern* Countries	All Others	Total
			1. Thousand metric tons				
1967	2.4	0.9	0.1	1.2	-	0.3	4.9
1968	4.6	0.4	0.1	0.9	-	0.3	6.3
1969	3.7	1.1	0.1	1.9	-	0.6	7.4
1970-72#	2.27	0.63	0.45	1.57	1.07	1.40	7.39
1973	1.2	2.2	0.9	3.3	0.2	2.5	10.3
1974	2.8	1.4	0.3	5.3	0.1	3.1	13.0
1975	0.6	0.5	-	2.2	0.4	0.7	4.4
1976-78#	3.27	0.87	0.33	4.03	0.97	2.50	11.97
1979-81#	2.27	1.60	3.53	3.30	1.70	2.53	14.93
1982	0.9	1.0	1.1	1.1	0.4	2.7	7.2
			2. Percentages				
1967	49.0	18.4	2.0	24.5	-	-	100.0
1968	73.0	6.3	1.6	14.3	-	-	100.0
1969	50.0	14.9	1.3	25.7	-	-	100.0
1970-72	30.7	8.5	6.1	21.2	14.5	19.0	100.0
1973	11.6	21.4	8.7	32.0	1.9	24.4	100.0
1974	21.5	10.8	2.3	40.8	0.8	23.8	100.0
1975	13.6	11.4	-	50.0	9.1	15.9	100.0
1976-78	27.3	7.3	2.7	33.7	8.1	20.9	100.0
1979-81	15.2	10.7	23.6	22.1	11.4	17.0	100.0
1982	12.5	13.9	15.3	15.3	5.6	33.3	100.0

SOURCE: (a) "Kapniki Epitheorissis" (Tobacco Review),Various Years, Athens, Greece, (in Greek).

(b) National Tobacco Board of Greece, Division of Commerce. Exports of Greek Unmanufactured Tobacco, Athens, Greece. Various Years.

(*) including Yugoslavia

(#) average per year

tremendously. On the national level it increased by 21.4 percent in 1981 as compared to 1980, by another 21.0 percent in 1982, and by another 44.3 percent in 1983 as compared to 1980, reaching an all-time record of 9,606 hectares.

While the Departments (Nomoi) of Imathia and Karditsa were the first areas to plant the new crop, the district of Yiannitsa (Department of Pella) by 1967 (three years after the introduction of burley in the valley of Yiannitsa) became the leading producing area in the country.

Today the valley of Yiannitsa, distributed along the two departments of Imathia and Pella. accounts for most of the crop (81.4 percent in 1983) grown in Greece (Tables 11 and12). In 1983 the district of Yiannitsa accounted for 66.1 percent of the total area of the country's total planted area under burley tobacco. In that particular area the crop has the best soil and climate conditions (fertile soils of good drainage with high organic matter content and favorable humidity conditions for curing and bulking).

The next largest area is the Department of Karditsa (15.1 percent) and the Department of Pieria (2.3 percent), as well as other areas in the region of Thessaly and Eastern Macedonia (1.2 percent) making up the balance (Tables 11 and 12).

Akehurst (1981:285), considering the average yields of 2,500 kg per hectare (2,232 lb per acre) commented that "productivity is high". According to data gathered by the Office of Yiannitsa of the National Tobacco Board, average yields per hectare are even higher. They ranged from 2,600

Table 11. Area Under Burley Tobacco in Specified Departments (Nomoi) of Greece, 1960-1983.

Year	Imathia	Yiannitsa	Pieria	Karditsa	Other areas	Total (Greece)
			1. Hectares			
1960	0.7	-	-	0.2	0.2	1.1
1961	3	-	6	5	3	17
1962	73	-	76	40	23	212
1963-65*	587	114	187	268	171	1.327
1966-68*	772	1,495	303	381	247	3,198
1969-71*	892	2,713	370	601	409	4,985
1972	651	2,841	233	424	283	4,432
1973	779	3,055	233	574	251	4,892
1974	317	2,593	154	482	158	3,704
1975-77*	730	3,577	241	722	219	5,489
1978-80*	988	3,604	214	776	144	5,726
1981	975	4,032	169	965	107	6,248
1982	1,091	4.843	193	1,097	103	7,327
1983	1,389	6.430	221	1,455	111	9,606
			2. Percentages			
1960	63.6	-	-	18.2	18.2	100.0
1961	17.6	-	35.3	29.4	17.7	100.0
1962	34.4	-	35.8	18.9	10.9	100.0
1963-65	44.2	8.6	14.1	20.2	12.9	100.0
1966-68	24.1	46.8	9.5	11.9	7.7	100.0
1969-71	17.9	54.4	7.4	12.1	8.2	100.0
1972	14.7	64.1	5.2	9.6	6.4	100.0
1973	15.9	62.5	4.8	11.7	5.1	100.0
1974	8.6	70.0	4.1	13.0	4.3	100.0
1975-77	13.3	65.2	4.4	13.1	4.0	100.0
1978-80	17.3	62.9	3.7	13.6	2.5	100.0
1981	15.6	64.5	2.7	15.5	1.7	100.0
1982	14.9	66.1	2.6	15.0	1.4	100.0
1983	14.5	66.9	2.3	15.1	1.2	100.0

SOURCE: (a)"Kapniki Epitheorissis" (Tobacco Review), Various Issues. Athens, Greece, (in Greek).

(b) National Tobacco Board of Greece. Statistical Bulletin of Tobacco Production, Various years, Athens, Greece.

(*) average per year.

Table 12. Production of Burley Tobacco in Specified Areas of Greece, 1962-1983, Metric tons.

Year	Yiannitsa		Veria		Karditsa		Other Areas		Greece	
	tons	%	tons	%	tons	%	tons	%	tons	%
1962	178	39.8	-	-	71	15.9	198	44.3	447	100.0
1963	888	49.0	-	-	380	20.9	546	30.1	1,814	100.0
1964	2,147	59.8	-	-	636	17.7	807	22.5	3.590	100.0
1965	2.843	66.8	-	-	624	14.6	791	18.6	4,258	100.0
1966	4,265	71.5	-	-	766	12.8	938	15.7	5,969	100.0
1967	5,093	52.5	2,138	22.0	1,071	11.0	1,404	14.5	9,706	100.0
1968	5,740	60.9	1,774	18.8	895	9.5	1,016	10.8	9,425	100.0
1969	7,499	62.6	2,091	17.4	1,161	9.7	1,235	10.3	11,986	100.0
1970	7.786	52.8	2,120	14.4	2,580	17.5	2.265	15.3	14,751	100.0
1971	8,742	58.6	2,308	15.5	2,213	14.9	1,645	11.0	14,908	100.0
1972	8,214	68.1	1,583	13.1	1,139	9.4	1,130	9.4	12,066	100.0
1973	9,160	64.7	1,940	13.7	1,820	12.9	1,233	8.7	14,153	100.0
1974	7.441	69.0	931	8.7	1,545	14.3	863	8.0	10,780	100.0
1975	8,786	66.4	1,481	11.2	1,806	13.6	1,161	8.8	13,234	100.0
1976	10,856	65.6	2,209	13.4	2,221	13.4	1,250	7.6	16,536	100.0
1977	11,394	63.3	2,594	14.4	2,712	15.1	1.290	7.2	17,990	100.0
1978	14,316	63.6	3,948	17.6	2,797	12.4	1,434	6.4	22,495	100.0
1979	13,828	67.5	3,555	17.4	2,190	10.7	901	4.4	20,474	100.0
1980	11,554	64.5	2,982	16.7	2,674	14.9	690	3.9	17.900	100.0
1981	13,233	64.0	3,093	15.0	3,053	14.8	1,285	6.2	20,664	100.0
1982	16,303	67.5	3,489	14.5	3,464	14.3	901	3.7	24,157	100.0
1983	17,355	65.7	3,751	14.2	4,504	17.1	782	3.0	26,392	100.0

SOURCE: (a) "Kapniki Epitheorissis" (Tobacco Review), Athens, Greece, Various Issues, (in Greek).

(b) National Tobacco Board of Greece. **Statistical Bulletin of Tobacco Production,** Athens: Greece. (Various Years).

kg per hectare (1975) to 3,710 per hectare (1979) for the district of Yiannitsa and 2,480 kg per hectare (1976) to 3,520 per hectare (1978) for the district of Veria. Tobacco growers in Agios Loukas consider yields below three metric tons per hectare as unprofitable and insist that a farmer

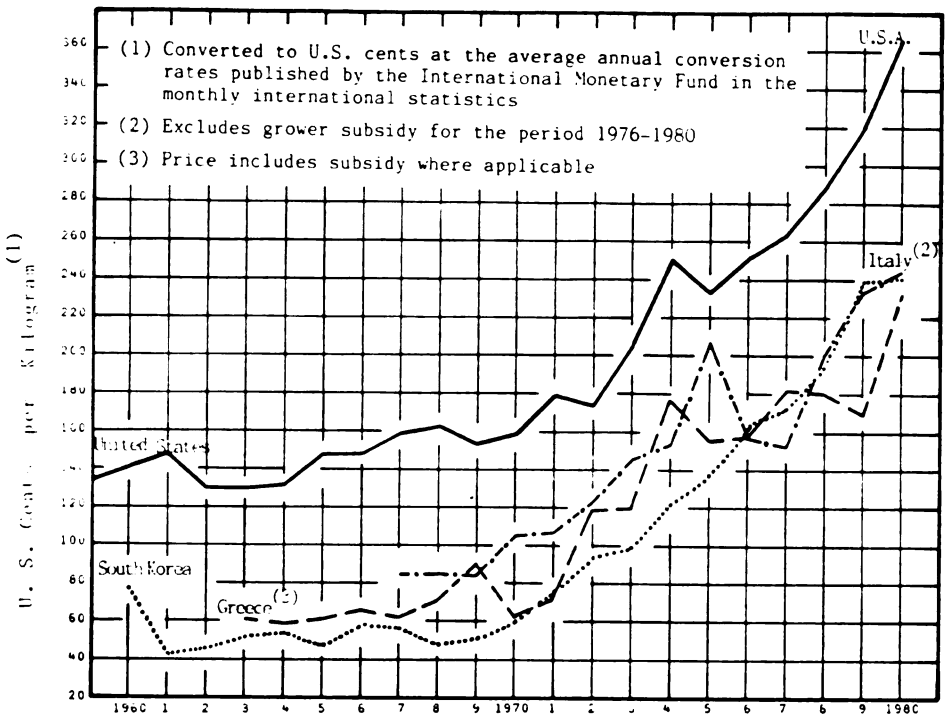


Figure 4. Average Grower Prices of Burley Tobacco inthe Major Exporting Countries.

should strive to obtain yields above that level if he wants to make money.

World burley tobacco production increased from 269.7 thousand metric tons on the average between 1955-1959 to 624.8 thousand metric tons between 1980-1982 (Table B-10). This 131.7 percent increase over the past twenty four years was mainly the result of changing consumer taste preferences. Most of the increased world production came through the efforts of the tobacco multinational corporations to introduce burley tobacco to a number of "developing" countries where cost of labor was very low as compared to the United States. By 1963 there were almost 40 countries

producing burley in contrast to only 21 producing countries in 1953.

Average prices for burley tobacco paid to U.S. growers were higher, throughout the period 1959-1980, than prices paid to South Korean, Italian, and Greek growers (Figure 4). Lower prices for non-U.S.A. growers cannot be justified in terms of the lower quality of their leaf. As early as 1976, the U.S. Department of Agriculture ("Foreign Agriculture Circular:Tobacco. FT6-76), admitted that "...the quality of leaf in many producing countries has improved considerably and is now close in quality and characteristics to U.S. leaf".

The share of the United States in World burley production dropped substantially. While the United States burley production amcunted to 81.8 percent of world production in the period 1955-59, its share dropped to 48.9 in 1980-1982. Greece today cultivates 3 percent of the world production of burley and its share has been roughly steady since the period of 1970-1974. Italy, Spain, Mexico, South Korea and Brazil are also major producing countries (Table B-10).

The world trade of burley tobacco increased eight times during the last 24 years (Table B-11). The United States' share in world trade of burley decreased from 59.6 percent in 1955-1959 to 24.7 percentin 1980-1982, as Tobacco Manufacturers increased purchasing the lower priced tobacco produced in the new burley producing countries. Greece increased its share in the world trade of burley tobacco

from 2.1 percent in 1960-1964 to 10.9 percent in 1980-1982. Italy and South Korea are two other major exporting countries with a share of 14.1 percent and 13.0 percent, respectively, in 1980-1982 (Table B-11).

3. Summary

The preceding analysis of changes brought about in Greek agriculture during the post war era (1948-1983) has pointed out three major trends.

First, that the substantial increases in agricultural output were not realized by bringing more land into cultivation --that option was exchausted mainly before World War II-- but rather through increases in the inputs used (fertilizers, insecticides, pesticides, and herbicides, high yielding varieties, machinery, irrigation, etc.).

Second, the average farm was not able to expand its acreage and realize substantial increases in its income through increases in the scale of operation.

Finally, through the gradual integration of rural areas to the broader Greek society, improvement of the level of living has also become the major theme of households in rural areas, putting additional pressure upon the performance of their economic institution.

With fertility rates higher in rural areas than in urban areas of the country, coupled with the lack of off-farm work, population pressure upon land was intensified.

Therefore, the average farm household had no other option than to intensify its production by using more capital and labor resources over the same land base. Crops like decidous fruits, canning tomatoes, burley tobacco, out of season vegetables etc, capable of providing higher income per unit of land, called "dynamic crops" (dynamikes kalliergies) soon became the crop choices of farmers striving to increase their income.

The introduction of this new technology was not free of social impacts as was evidenced in numerous studies throughout the world following the "green revolution". The impacts of such a crop, burley tobacco, on the economic and social organization of a Greek village will be examined in the sections that follow.

IV. SOCIAL AND ECONOMIC IMPACTS OF THE NEW CROP

1. Introduction of Tobacco to Agios Loukas

Six years after burley tobacco was first cultivated in Greece (1960) on an experimental basis only a few miles from Agios Loukas, the new crop was introduced to the village. According to local informants, a German named Bucher, working with Intertab S.A., a German tobacco firm, came to the village to persuade farmers to contract with them. Six to nine farmers decided to plant some fields of tobacco that same year. Subsequently, they were joined by other farmers and within two to three years, the number of tobacco growers reached approximately 90.

Farmers intending to plant tobacco had to sign a contract with either Intertab or one of the other tobacco marketing companies. As Alekos, currently the largest tobacco grower in the village, recalls:

> "When tobacco was introduced to the village, it didn't have the protection it has today. That is, if any exporting tobacco company with which you signed a contract refused to buy the produce, the State ("Kratos") could not force the company to meet the terms of the contract".

Alekos refers to the 1970 crop when a $ 0.673 per kilogram subsidy provided to Italian burley growers through the common agricultural policy initiated that year resulted in total loss of the West German market. Tobacco marketing companies even refused to buy the crop which had been contracted. For three consecutive years, 1970-1973, tobacco

Table 13. Average Grower Price Indices for Burley Tobacco and Selected Crops, Greece, 1965-1983 (1965=100)

Year	Burley Tobacco	Canning Tomatoes	Wheat	Corn	Sugar beets	Alfa-lfa	Canning Peaches	Cotton
1965	100	100	100	100	100	100	100	100
1966	107	93	96	96	93	111	90	95
1967	102	92	98	97	88	90	113	97
1968	115	97	104	101	95	101	55	109
1969	147	84	101	101	96	107	145	96
1970	102	83	93	102	89	90	98	108
1971	119	82	91	102	88	103	121	128
1972	119	66	95	105	100	112	106	133
1973	178	105	166	144	137	161	181	254
1974	180	126	164	162	223	151	144	222
1975	224	147	186	190	195	177	223	189
1976	232	176	207	209	206	205	190	318
1977	257	193	238	226	218	255	234	266
1978	293	239	262	261	248	311	204	277
1979	284	269	297	290	252	289	454	333
1980	324	333	371	357	364	399	432	443
1981	595	404	400	400	477	587	480	605
1982	901	496	512	517	511	773	606	836
1983	848	652	591	602	586	844	717	1,054

SOURCE: Ministry of Agriculture. Unpublished data.

growers received prices substantially lower than those received for the 1969 crop. Prices paid to burley tobacco growers on a national level in 1970 were only 2 percent higher than prices paid in 1965 (Table 13).

Farmers were so upset by the highly depressed market and the reluctance of tobacco marketing companies to buy the produce at reasonable prices that some of them, as I have been told, took their tractors and destroyed already planted tobacco fields. Purchase of farm machinery (tractors) also dropped significantly (Table C-6) as farmers planning to

grow burley tobacco were discouraged by the sluggishness of the tobacco industry.

In 1972, the State stepped in and started providing subsidies. At the same time, the system of contracts signed with marketing companies was replaced by allotments given to farmers according to their family size, size of farm, and availability of curing barns. Thereafter, new allotments were issued to newly established farmers and migrants repatriated from West Germany. The area planted to tobacco stabilized at approximately 200 hectares during the period 1976-1980.

The abolishment of the allotment program by the end of 1980, as a result of Greece's entry into the EEC, coupled with substantial increases in prices paid to farmers (Table 13), boosted the area of tobacco planted to a record high. The area in tobacco increased from 197 hectares in 1980 to 303.8 hectares in 1981, 375.5 hectares in 1982, and 533.3 hectares in 1983. This was a 170.7 percent increase over 1980 compared with a 102.3 percent increase for the district of Yiannitsa and a 86.7 percent increase for the country (Tables 14 and 11).

Annual expansion of area devoted to burley production was higher in Agios Loukas than in the district of Yiannitsa (Figure 5 and Table 14). As a result, by 1983,tobacco growers of Agios Loukas accounted for 8 percent of the total area planted in tobacco in the district of Yiannitsa, as compared with 5.7 percent in 1974 (Tables 14 and C-1). It seems that Agios Loukas growers were under more pressure to

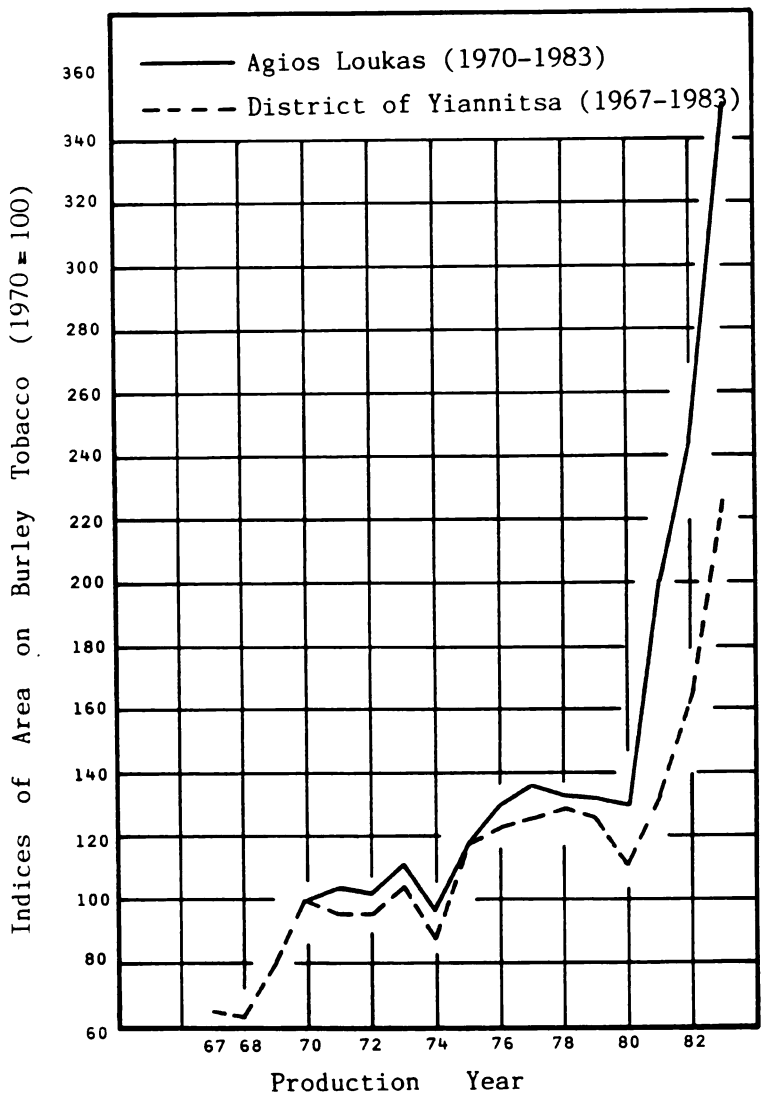


Figure 5. Trends in Area of Burley Tobacco Planted by Agios Loukas Farmers (1970-1983) and Farmers in the District of Yiannitsa (1967-1983)

Table 14. Area in Burley Tobacco. Agios Loukas and District of Yiannitsa, 1967-1983.

Year	Agios Loukas			District of Yiannitsa	
	Area (hectares)	Index	Percent of	Area (hectares)	Index
1967	na	na	na	1,910.7	65
1968	na	na	na	1,852.2	63
1969	na	na	na	2,365.8	80
1970	151.8	100	5.1	2,951.5	100
1971	157.7	104	5.5	2,842.1	96
1972	155.6	103	5.5	2,843.5	96
1973	168.6	111	5.5	3,084.1	104
1974	146.7	97	5.7	2,593.0	88
1975	179.0	118	5.1	3,488.9	118
1976	197.5	130	5.4	3,644.8	123
1977	207.0	136	5.6	3,722.1	126
1978	202.0	133	5.3	3,796.1	129
1979	200.0	132	5.4	3,725.9	126
1980	197.0	130	6.0	3,289.9	111
1981	303.8	200	7.7	3,922.0	133
1982	375.5	247	7.8	4,842.8	164
1983	533.3	351	8.0	6,656.3	226

SOURCE:NationalTobacco Board of Greece.Office of Yiannitsa. Unpublished Statistical data.

na = not available

expand the area on burley tobacco than other tobacco growers in the district of Yiannitsa and the country at large.

Yields in Agios Loukas are consistently higher than yields achieved in other areas of the district of Yiannitsa and the Department (Nomos) of Veria (Table C-2).

The tremendous increases in the area under burley tobacco and the need to rotate the crop forced tobacco growers of Agios Loukas to rent new fields in nearby

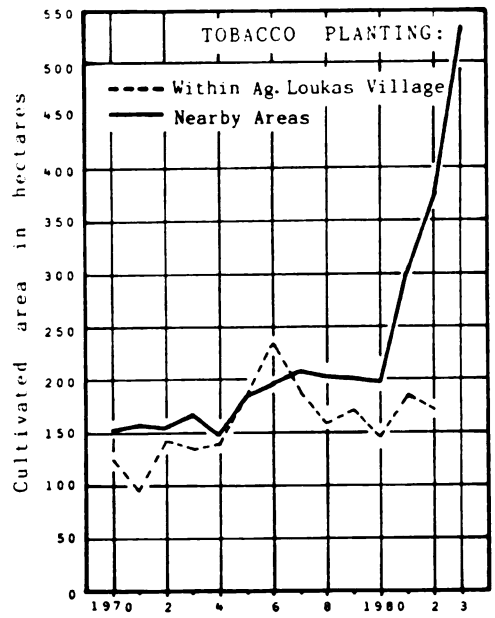


Figure 6. Changes in Area Planted to Tobacco Within the Village and Nearby Areas by Agios Loukas Farmers, 1970-1983

villages. This increased dependency of village farmers on land rented outside the village farming area is shown in Figure 6. By 1982, 53.9 percent of tobacco crop of Agios Loukas farmers was planted on land rented outside the village. The percentage increased to 68.1 percent in 1983 (2.6 times more than in 1980). This increasing reliance on rented land and the greater concentration of production, especially after 1980, had some very significant impacts on the economic and social organization of the village. We shall examine those impacts in subsequent chapters.

2. Burley Tobacco Production Characteristics

Burley tobacco as a crop has certain rather specific biological, ecological and technical characteristics. They must be taken into account in studying its impacts on the economic and social organization of Agios Loukas.

2.1 Soil Requirements

Burley tobacco requires fertile soils with good drainage, open texture and good structure. According to Akehurst (1981:291), "in Greece, the more fertile ova and plain soils provide suitable burley soils, given avoidance of tight pockets with poor drainage". In addition, increased content of organic material is highly desirable for good burley production. The soils derived from the drainage of the Lake of Yiannitsa are especially suitable for burley tobacco, and yields achieved had been very high, sometimes over 4,000 kg per hectare.

2.2 Climate Requirements

Climate is a very crucial factor in burley tobacco production. "The desirable, thin, open-textured leaf of burley tobacco is favored by steady, uninterrupted growth and absence of marked moisture stress" (Akehurst, 1981:293). In addition, curing done in an uncontrolled artificial

environment requires humid and hot weather for a period of time after harvest (humidity ranging between 65-90 percent and temperature ranging between 16-34 degrees Celcious).

Humidity and weather temperatures are adequate during autumn in the area of Yiannitsa to cure the leaf satisfactory, but rainfall during the growing season is inadequate and, therefore, the crop depends heavily on irrigation. Tobacco growers irrigate their fields four to five times in heavy soils. and eight to ten times in light soils during the two-month growing season. Tractor driven pumps are used to force water through sprinklers and thus to provide plants not only with the necessary soil moisture, but with the equally desired air humidity.

2.3 Capital Requirements

Burley tobacco is a capital intensive crop both in terms of cash, and machinery and buildings. Various inputs are required throughout the production cycle (plastic sheets for the seedbeds, large quantities of fertilizers --the largest ever used for a single crop-- incorporated into the soil and spread with insecticides, several chemicals for weed control and soil fumigation, bulking materials, etc).

In addition, one tractor with the necessary attachments (trolly, ploughshares, rotary tiller, power sprinklers, power sprayer, transplanter), is a must even for a small scale tobacco operation. Soil preparation and transplanting,

irrigation of the crop several times during the growing season, application of fertilizers, pesticides and herbicides, hoeing of the crop two to three times, transportation of workers and harvest, put a high demand on mechanical power.

Furthermore, burley tobacco is an air-cured type of tobacco. Curing is done in large wooden buildings covered with laminated sheets and numerous vertical side windows to control ventilation. The barn must be sturdy since a load of freshly cut tobacco is very heavy. While width and height are standard for all curing barns (13.6 meters and 5.8 meters, respectively) length varies depending on the individual farmer's scale of activity. It is estimated (Xenitidou, 1982:42) that 1,200 to 1,300 cubic meters of curing space are required for one hectare of tobacco. The present cost (1983/84), of a curing barn capable of accomodating the tobacco produced on two hectares is estimated to be about one million drachmas (10,000 U.S. D).

Local informants estimated the capital needed to start a small scale tobacco operation to about 3,000,000 drachmas (30,000 U.S.D). In addition, half a million drachmas is required as a working capital in order to pay rents and wages and purchase the various inputs required.

Another important aspect of tobacco production is the fact that the recycling period is at least twelve months and sometimes is expanded to 16 months when weather is not conductive to bulking. Therefore. tobacco growers are frequently facing severe cash flows problems.

2.4 Labor Requirements

Tobacco is also a labor intensive crop. Despite the adoption of various labor saving techniques (chemical and mechanical weed control, use of transplanting machines) tobacco still demands considerable human labor. Pulling seedlings from nurseries, feeding the planting machine, weed control after the plant attains a certain height that impedes the use of machinery, leaf stripping and hanging, are laborious tasks.

A family of three having atractor andthe necessary machinery (plough, trolly, rotary tiller, power sprayer, power sprinklers) cannot cultivate more than two hectares of tobacco. Even at high labor demand stages (leaf stripping), the family has to hire a few workers for several days.

This labor shortage created after the introduction of burley tobacco in Agios Loukas and the relatively steady demand for labor from mid April to September resulted in attracting some 500 migrant workers every year.

2.5 Technical Skills

Burley tobacco production requires at least five years of experience on the part of the operator. Certain stages in the production process are very critical to the yields achieved both in terms of quality and quantity. Seedbeds require careful preparation and experience in detecting diseases through their early symptoms. Eradication of any disease before it is spread throughout the entire nursery, is

very critical to the entire operation. Once tobacco seedlings have been severely damaged new seedlings cannot be obtained for planting during the same growing season.

Curing also requires a lot of experience on the part of the operator. Poor ventilation and high temperatures can result in burning the curing crop in a matter of a few hours. With no air conditioning facilities used and even lucking humidity and temperature measurement instruments, tobacco growers have to rely entirely on their own experience to control the environment inside the curing barn. Proper spacing of the leafs depending on their stage of drying and control of the side windows are the only means used to control humidity and temperature inside the curing barn. Proper control of both require substantial experience on the part of the tobacco grower.

In addition, Argyropoulos (1972:13) mentioned the skills required to operate the array of machinery used in tobacco production, to provide maintainance, and to be able to make minor repairs, as very critical aspects of a successful tobacco grower.

3. Impacts on Land Tenure

The average size of operated land in Agios Loukas was 2.8 hectares in 1961, 12.5 percent less than the national average. By 1971 the gap had narrowed to only 2.9 percent less than the national average, and by 1981 the average farmer in Agios Loukas was farming about 3.8 hectares, or 29.4 percent above that of the average Greek farmer (Tables 3 and 15). This increase is attributable to a 27 percent increase in the total cultivated area followed by a 21 percent decrease in the number of farm operations (Table 15).

At the same time a consolidation of the fragmented farms implemented by the mid-60s lowered to about half the number of parcels and resulted in doubling the size of the average parcel (0.62 hectares in 1961 as compared with 1.41 hectares in 1981). According to tobacco growers in Agios Loukas, the consolidation of fragmented holdings increased the amount of land available for rent since tobacco growers prefer to rent plots of land of at least one hectare in size.

Despite those increases in the average size of land operated, most of which came through land rentals in nearby villages, pressure upon land is higher in Agios Loukas than in any of the neighboring villages (Figure 7). As already mentioned, land allocated to Agios Loukas at the time of the land distribution program in 1930s was limited because the

Table 15. Fragmentation of Farms, Agios Loukas, 1961, 1971, and 1981 Censuses.

	1961		1971		1981	
	Number	Index	Number	Index	Number	Index
Farms reporting parcels	225	100	220	98	178	79
Number of parcels	1,003	100	584	58	559	56
Area of parcels (hectares)	619.9	100	758.9	122	789.4	127
Average farm size (1) (hectares)	2.8	100	3.4	121	4.4	157
Average area per parcel (hectares)	.62	100	1.30	210	1.41	227

SOURCE: (a) N.S.S.G. 1966. **Results of the Agriculture-Livestock Census of March 19, 1961. Vol. I,** Pp 39, Athens: National Printing Office

(b) -------. 1978. **Results of the Agriculture-Livestock Census of March 14, 1971. Vol. I.** Pp 299, Athens:National Printing Office

(c) --------. 1981. **Agriculture-Livestock Censusof April 5, 1981.** Analysis by the Author (for dissertation research from field data).

(1) refers to cultivated area (owned and rented)

natives feared that abundance of land resources would attract more settlers to their village; they asked the land commission not to allocate more land than they were farming at that time. In 1981 the land ratio in Agios Loukas was 0.5 hectares per capita, while the ratio in the adjacent village of Galatades was double (1.0 hectares per capita) and slightly higher (1.1 hectares per capita) in the village

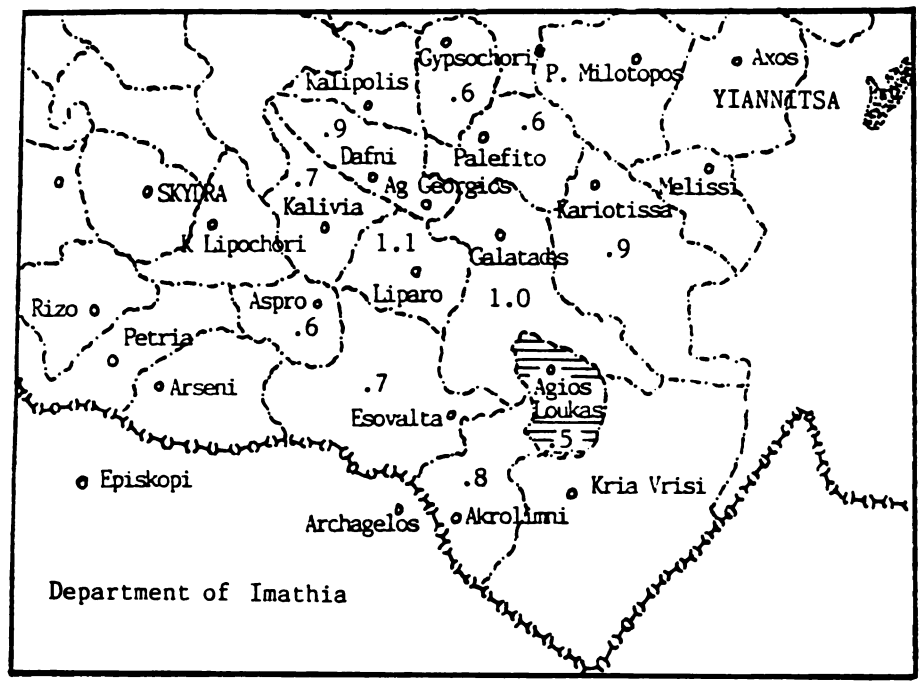


Figure 7. Pressure Upon Land (hectares of farmland per capita) in the village of Agios Loukas and Nearby Villages (based upon 1971 data on farmland and 1981 data on population).

of Liparo. Both villages supply most of the rental land to tobacco growers in Agios Loukas (Figure 10).

Burley tobacco has had some very semantic impacts on land tenure in Agios Loukas. Land use, area of land rented and rentspaid, priceof land andlandownershiphave been greatly affected by the gradual introduction of burley tobacco into the production system of the village. In the following sections an attempt is made to delineate the impacts of burley production on land use, area rented and rents paid, land prices and finally on land concentration.

3.1 Land Use

The change in use of cultivated land (Table C-3) was not dramatic between 1961 and 1981 except for tree crops (12 percent of total area in 1981 as compared with only 3 percent in 1961. However, there were some big differences around the various crops classified as annual crops by the Statistical Service of Greece.

In 1965-67 (Table 16). just prior to the introduction of burley tobacco, the main crops cultivated within the administrative boundaries of the village were wheat, cotton, beans, and corn, occupying 50.8 , 11.6 , 8.5 , and 8.1 percent, respectively. By 1981-83 the commodity distribution was quite different with tobacco, peaches, corn, and sugar beets the main crops and occuping 27.3 , 23.2 , 17.4 , and 11.1 percent, respectively, of the cultivated land which belongs administratively to the village of Agios Loukas. Wheat had dropped to 9 percent, while cotton and beans disappeared (0.3 and 0.1 percent respectively).

Similar data for the period 1970-1982 (Figure 8) compiled by the Secretary of the village and referring to the land within the administrative boundaries of Agios Loukas pinpoint the dramatic changes in the area occupied by the eight major crops (wheat, barley, corn, sugar beets, cotton. canning tomatoes, peaches, and alfalfa).

Considering all the land cultivated by farmers in Agios Loukas regardless of the particular village to which the land belongs, land use for the 1980-81 crop year shows a similar pattern. Substitution of extensive crops by inten-

Table 16. Area Occupied by Various Field and Tree Crops in Agios Loukas, Averages for 1965-67, 1975-77, and 1981-83 (1).

Crops	1965 - 1967		1975 - 1977		1981 - 1983	
	hectares	%	hectares	%	hectares	%
Wheat	146.0	50.8	39.0	8.2	42.9	9.0
Corn	23.2	8.1	11.5	2.4	83.2	17.4
Cotton	33.4	11.6	18.8	3.9	1.6	0.3
Tobacco	3.3	1.1	179.1	37.5	130.4	27.3
Sugar beets	21.3	7.4	27.9	5.8	53.2	11.1
Beans (dried)	24.4	8.5	1.4	0.3	0.5	0.1
Vegetables	1.1	0.4	47.0	9.8	15.4	3.2
Squash	6.1	2.1	-	-	-	-
Alfalfa	10.8	3.8	36.6	7.7	28.2	5.9
Peaches	4.9	1.7	106.8	22.3	110.7	23.2
Other tree fruits	9.9	3.4	2.8	0.5	1.0	0.2
Idle land	2.8	1.0	8.0	1.7	10.9	2.3
Total (2)	286.9	100.0	478.0	100.0	478.0	100.0

SOURCE: Ministry of Agriculture. Local Organization of Land Improvements, Kariotissa and Akrolimni Offices. "Statistical Table of Crops Cultivated in Agios Loukas", 1984, (unpublished documents)

(1) includes part of the village farmland surveyed each year by the Organization of Land Improvements

(2) minor differences are due to rounding errors

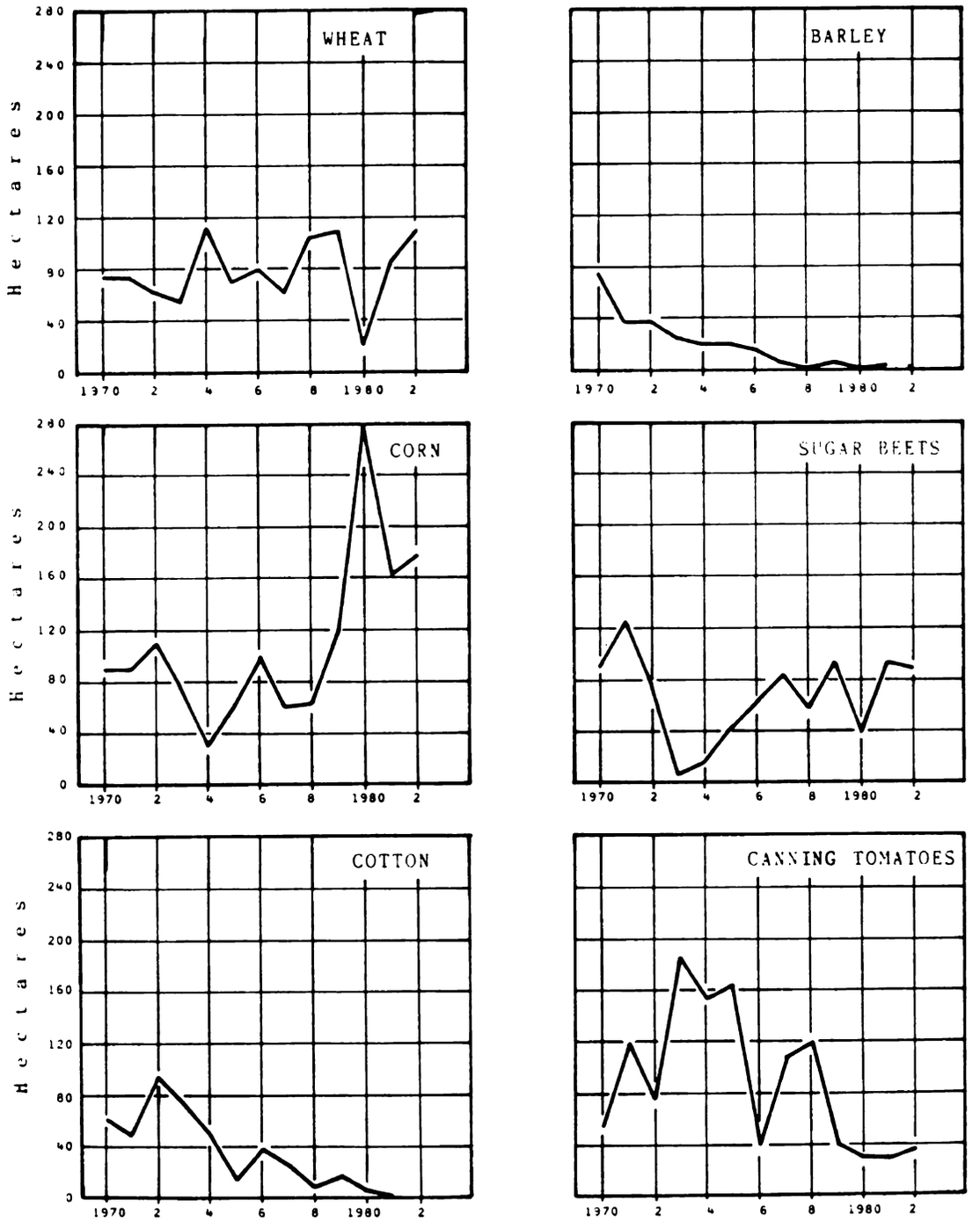


Figure 8. Changes in the Area of Village Farmland Occupied by Various Crops. 1970-1982.

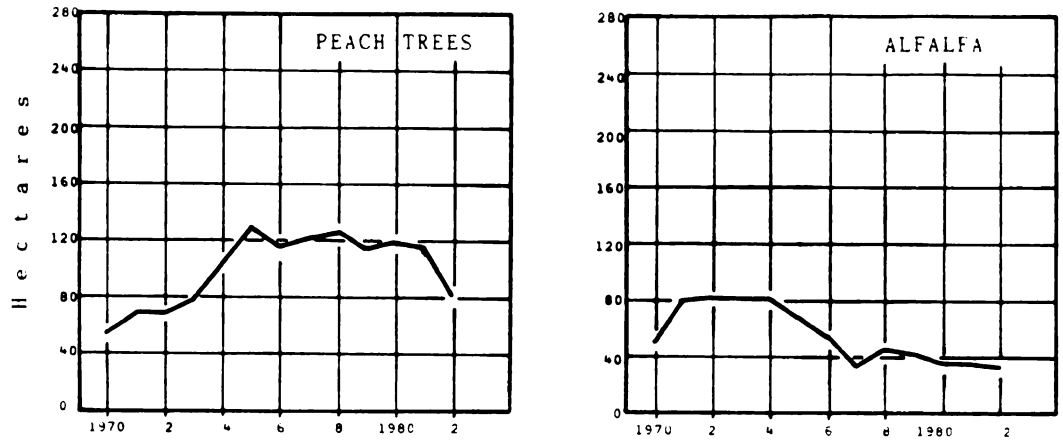


Figure 8. Changes in the Area of Village Farmland Occupied by Various Crops, 1970-1982 (continued)

sive crops in terms of labor and capital and capable of providing higher income per unit of land. Tobacco, however. amounted to 36.4 percent of all land cultivated by farmers of Agios Loukas as compared with 23.4 percent when only the land of Agios Loukas is considered (Table 17). In other words, farmers from Agios Loukas who rent land in nearby villages --and many of them do-- rent the land mostly for tobacco production.

In summary. land use in Agios Loukas has changed over the past thirty years, especially after the introduction of burley tobacco. Wheat, cotton, and beans, the main crops of the 50s have been replaced by burley tobacco, corn, and peach trees --crops that are more labor and capital intensive and provide higher income per unit of land. These three crops, along with sugar beets and wheat, occupy about

Table 17. Area Planted to Selected Major Crops Within the Village and Nearby Areas by Agios Loukas Farmers, 1980-81 Crop Year, Percentages.

Crop	Agios Loukas Farmland	All Land Cultivated by Agios Loukas Farmers
	Percentages	
Tobacco	23.4	36.4
Corn	20.5	18.9
Peach trees	14.4	10.9
Sugar beets	11.7	7.4
Wheat	10.6	10.4
Total (percentage of all cultivated land for 5 crops)	80.6	84.0

SOURCE: (a) Agricultural Statistical Report of Agios Loukas
(b) 1981 Census of Agriculture

eight tenths of the total area cultivated by Agios Loukas farmers, both inside and outside the administrative boundaries of their village.

3.2 Land Rented Patterns and Arrangements

One of the main characteristics of farming in Agios Loukas is that half of the cultivated land is rented. According to the census (Table 18) 51.9 percent of the 646.6 hectares cultivated in 1961 was rented by the operators. Twenty years later, the proportion of rented land had not changed (49.8 percent of the total 786.2 hectares of culti-

Table 18. Changes in Owned, Rented, and Cultivated Land, Agios Loukas, 1961, 1971, and 1981.

Census		Owned		Rented		Total	
		Number	%	Number	%	Number	%
1961	Hectares	311.3	48.1	335.3	51.9	646.6	100.0
	Operations	136		*		237	
	Mean size	2.3		*		2.7	
1971	Hectares	*		*		790.6	
	Operations	*		*		232	
	Mean size	*		*		3.4	
1981	Hectares	394.7	50.2	391.5	49.8	786.2	100.0
	Operations	176		90		177	
	Mean size	2.2		4.4		4.4	
% change 1961/81	Hectares	26.8		16.8		21.6	
	Operations	29.4		-		-25.3	
	Mean size	-2.2		-		62.6	

SOURCE: (a) For 1961: N.S.S.G. 1966." Results of the Agriculture-Livestock Census of March 19,1961" Vol I, Athens:National Printing Office

(b) For 1971: N.S.S.G. 1978."Results of the Agriculture-Livestock Census of March 14, 1971", Vol. I, Athens: National Printing Office

(c) For 1981: N.S.S.G. 1981 Census of Agriculture. Analysis by the Author

vated land). But in 1961, most of the rented land had been leased from the church which owned a large proportion of the village land. Church lands were expropriated in 1965 and distributed to tenant farmers. Thus in 1981 the overwhelming majority of the rented land was privately leased, most of it from farmers in nearby villages.

Most of the rented land is devoted to tobacco production. In 1981, 43.9 percent of the area planted to tobacco was located outside the village boundaries of Agios

Table 19. Changes in the Area of Burley Tobacco Planted Within and Outside the Village Boundaries of Agios Loukas, 1981, 1983.

Year	Within the Village Farming Area		Outside the Village Farming Area		Total Area	
	Hectares	%	Hectares	%	Hectares	%
1981	160.2	56.1	125.4	43.9	285.6	100.0
1983	187.2	34.3	358.8	65.7	546.0	100.0

SOURCES: (a) For 1981: Census of Agriculture
(b) For 1983: Data derived from Village's Cooperative Office

Loukas (Table 19). That area represented half (49.7 percent) of the total land cultivated by villagers in areas outside the village boundary. With the rapid expansion of tobacco production. following the abolishment of the allotment program in 1981, rental arranges increased tremendously. According to data obtained from the local cooperative office, of the 546 hectares declared to be planted in 1983, only 187.2 hectares or 34.3 percent was located within the village boundaries. The rest (65.7 percent) was located in other nearby villages and most of this rented land was leased to tobacco growers in Agios Loukas.

The dramatic increases in rented land were brought about by the abolishment of the tobacco allotment program in 1981, coupled with high increases in the price paid to tobacco growers (Table 13 and Figure 9). In addition, as already mentioned, tobacco cannot be grown on the same field

for more than three years due to diseases which cannot be economically controlled with the available chemicals. Thus, farmers have to move their production to new fields at least every two years and, generally, this leads them to make rental arrangements with landowners in other, nearby villages.

Expansion of tobacco, combined with the needs of crop rotation, resulted in increasing competition for land suitable for tobacco. As a result, rents have skyrocketed during the last three to five years. Rents as high as 150,000 drachmas per hectare were paid in 1983.

Leases are either oral agreements or written contracts, but only for one year (which is contrary to the agricultural law requiring leases for land to be valid for a four-year period). Tobacco growers are literally at the mercy of land owners who lease their land to them. There is no security that a field to be leased is free of diseases; and the tobacco grower does not get any assurance that he will have the same field for the next year. If another tobacco grower outbids the current renter, and the current renter cannot match the offer, then he has to search for another field. There are also instances where a down payment was returned before the signing of the lease, because another tobacco grower offered a higher rent. Rent is usually prepaid, and there are cases where farmers renting out their land for two years requested prepayment of the total rent estimated, with approximately 20 percent increase for the second year.

The most common method used by a tobacco grower to

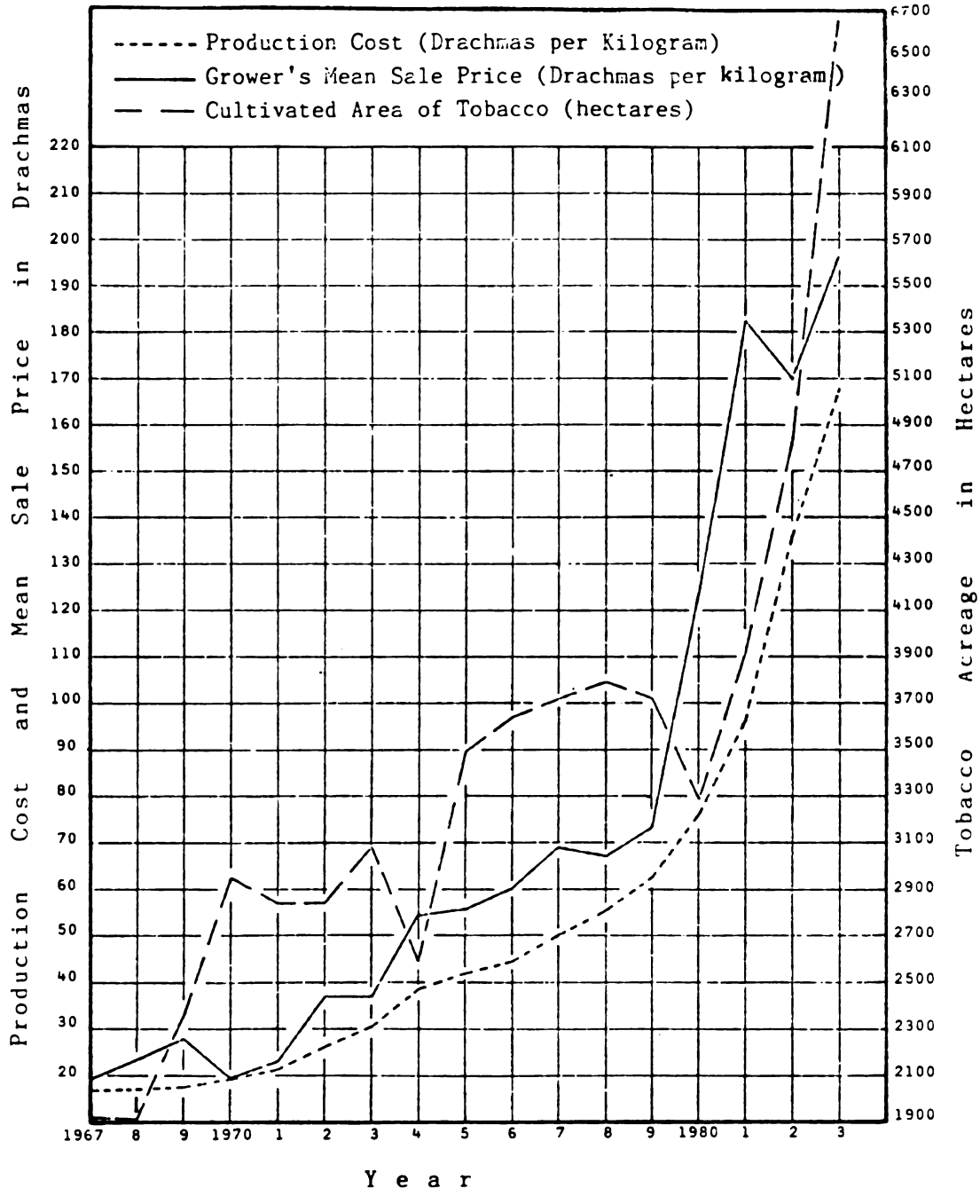


Figure 9. Trends in Area of Burley Tobacco Planted, Production Cost, and Grower's Mean Sale Price; District of Yiannitsa, 1967-1983.

search for available land is to question local villagers as to whether they know of farmers who have fields suitable for tobacco production. Friends and relatives living in nearby villages are also asked to pass along information about fields available for rent. In addition to these informal networks of land lease, in several communities a small number of persons act as brokers.

In addition to disease-free fields, tobacco growers prefer to rent fields that could be watered by a modern irrigation system than by individual wells. Depending on wells for irrigation of tobacco plants is a time-consuming, labor intensive activity. Then too, the necessary amounts of water are not always available.

Rents paid are crop-specific with rent for tobacco fields being the highest, followed by rent for corn fields. While rents as high as 150,000 drachmas per hectare were paid for tobacco in 1983, the majority of tobacco growers paid rents ranging from 100 to 130 thousand drachmas per hectare. Rents for corn ranged between 50 to 60 thousand drachmas per hectare; although 70 to 80 thousand per hectare were asked during fall, 1983 and winter, 1984.

Landowners usually lease their fields out for tobacco for two consecutive years to one or two tobacco growers; they themselves plant corn or wheat for the next four years before the field is returned to tobacco production. This is the most common rotation. Corn, following tobacco, gives very high yields due to the heavy application of fertilizers bytobacco growers.

Thus, renting fields for corn is not easy; according to an Officer of the Local Cooperative, the area of corn planted by a farmer fluctuates greatly from one year to another. If a farmer can rent fields for corn at a reasonable price, he has no problem in planting even 10 hectares since he already has all the machinery needed. In addition, the crop is not labor intensive (114 hours per hectare). Philippas. an average to small tobacco grower who wanted to plant additional fields with corn discovered that at 70 to 80 thousand drachmas rent per hectare, it did not pay to plant corn.

Tobacco growers in need of additional land have been forced to rent fields up to 17 kilometers away from the home village (Figure 10). Sakis, a young tobacco grower, negotiating by phone for the rent of a 4-hectare field outside Alexandria (18 kilometers away), provided the following explanation for his refusal to accept the offer:

> "I am not going to rent this field. It takes three quarters to an hour to dispatch farm workers to and from the fields. I would break the machinery".

Harris, who was also present at the discussion, told him that he knows a land owner in the next village who leased a 4-hectare field to a cotton grower for 100,000 drachmas per hectare. Sakis' response:

> "let's find the cotton grower and offer him 120,000 drachmas per hectare to withdraw".

Some tobacco growers, like Fanis, who rent land in Aspro (some 15 kilometers away) have purchased pick-up vans in order to transport hired workers faster than a tractor

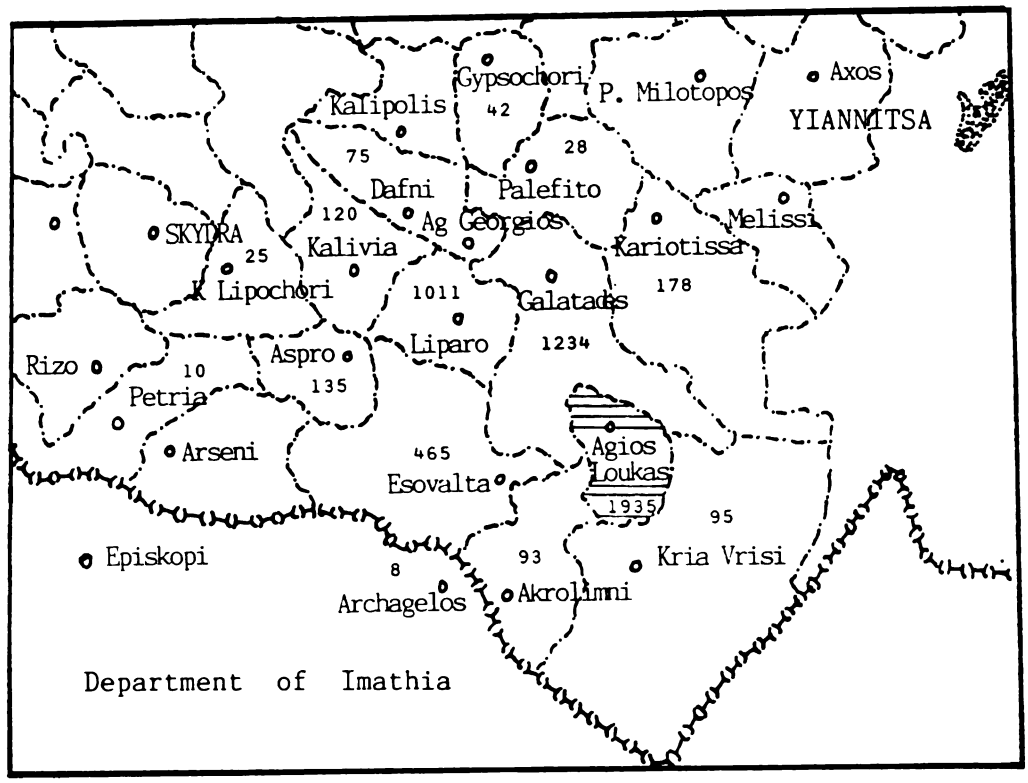


Figure 10. Land Rented for Burley Tobacco in Nearby Villages by Agios Loukas Farmers, 1983, (numbers refer to stremmas of land)

would over the same distance. Since Fanis is farming with his wife who does not have a driver's license, he plans to hire a farm worker with a driver's license:

> "I will hire a worker to drive the pick-up van. In the morning, he and the rest of the workers will reach the field much earlier than I, driving the tractor. On the way back home while I drive the tractor with the leaf harvested to the curing barn, the workers, reaching home earlier, will have time to clean up and be ready to join me in the curing barn".

"Who are those who lease out their land to tobacco growers in Agios Loukas?" was one of the questions I asked. Apart from retired farmers. and land owners who work off-farm, most of the leased out land comes from farmers in nearby villages. Yiannis, an old retired farmer, provided

the following explanation:

> "They are farmers... they were planting corn. wheat, sugar beets and the like, but considering that they can get 100,000 to 120,000 drachmas per hectare for a field not previously planted in tobacco, if they sow the field themselves, the land will not yield them much more".

Similar explanations were provided by many other farmers with whom I spoke. With rents as high as they are for tobacco land, a farmer receives more money than he can acquire from almost any other field crop (small grains, corn, sugar beets) grown in the area. In addition, the fact that the income is risk-free was emphasized by all respondents. As Mitsos put it:

> "They (those who rent their land to Agios Loukas farmers) get "dry" money. They do not have to worry in case of a hail or heavy rain. What crop they should grow to get that money?" (the rent they are getting).

In addition, Liparo and Galatades, the two villages that supplied 62.6 percent of the land leased by Agios Loukas tobacco growers in 1983, man/land ratio is the highest among all villages in the area (1.1 and 1.0 hectares per person, respectively). Both villages grow two high income crops (out of season vegetables in plastic green houses in Liparo and asparagus for export to West Germany, in Galatades). One hectare of land devoted to either one of those two crops is capable of providing a substantial income to the farm family. Therefore, the rest of the land, usually two to three hectares, can be leased out for tobacco production to interested farmers.

3.3 Land Prices

Since relevant statistics on agricultural land transactions are not compiled, even at the national level, I tried to get information from farmers and other local informants about changes in the price of land per hectare paid during the last twenty years. According to what I was told, the data in Table 20 represent fairly well the changes in the price of land paid between 1960 and 1983.

As one can see, following 1970 the price of land increased thirteen times. And although Greece has had high inflation rates since 1972, price of land increased faster than the inflation rates would justify. By 1983, price paid per hectare of farmland was 241.2 percent over the 1960 price adjusted for inflation rates between 1960-1982.

These dramatic changes were, to a large extend, related

Table20. Farmland Prices per Hectare of Land in Agios Loukas, Selected Years, 1960-1983.

Year	Price paid (drachmas)	Index (1960=100)	Price Adjusted to Consumer Price Index (drachmas)	(1)-(3)/(3)
	(1)	(2)	(3)	
1960	45,000	100	45,000	0.0
1965	70,000	156	48.800	43.4
1970	100,000	222	55,300	80.8
1975	400,000	889	99,000	304.0
1980	700,000	1,556	211,000	231.8
1983	1,300,000	2.889	381,000	241.2

SOURCES: (a) Local informants.
(b) N.S.S.G. "Statistical Yearbook of Greece". Various years.

to tobacco production. The suply of land has always been limited because people place high value on real property. Even most of those who earlier moved to urban centers have not sold their land. They retained ownership and leased out their land to farmers living in the village or in nearby villages.

The opinion expressed by Mrs. Vassiliki, a retired farmer and widow, is characteristic of the attitude of people towards land. Her son Paul, an electrician. working with the Power Utility Company in Ptolemaida, some 150 kilometers far from the village, considered selling his 1.7 hectare peach-tree yard 5 years ago. He received an offer of 700,000 drachmas per hectare without adding anything for the value of trees. Mrs. Vassiliki was against her son's decision to sell the land. She provided the following justification for her refusal:

> "The soil is not lost George. It's land. Does it ask for food? No. Why are people buying land? It is easier to sell land than it is to buy land".

Today they rent the land for tobacco for two years and then plant themselves corn for two or three years followed by wheat for another one or two years through contractual mechanical labor and then back in renting the land to a tobacco grower. Their practise is a rather typical pattern in Agios Loukas and the nearby villages.

With a limited suply of land for sale, and an increased demand for buying land brought about by high incomes generated from burley tobacco, it is not strange that land values have increased tremendously during the last thirteen

years. Within a radious of eight to ten kilometers around the village, you can only sporadically find a person selling an hectare or half an hectare. Today an offer of 1,300,000 drachmas per hectare can bring several potential buyers, since even at those prices many tobacco growers are willing to buy additional land.

The soaring prices of farmland, coupled with the high rents paid, have also attracted urban investors. Several farmers expressed their anger over the additional competition they were getting from lawyers, physicians, small business people and other non-farm persons who buy land for security and tax evasion purposes.

Those persons. with large sums of cash money, are paniking and seeking to make investments during the inflationary years. With the stock market in a chronic downtrend, and the purchase of additional house property that will be heavily taxed, they are left with no viable and attractive option other than investment in farmland. Transactions of farmland are not traced by the Greek Revenue Service, so investors can easily evade taxes on the rents they are collecting.

3.4 Land Ownership and Scale of Operation

Ownership of land is achieved in one or more ways: state land distribution programs, inheritance, marriage, and purchase. Most of the farmers in or approaching retirement age received most of the land they presently own through the

land distribution program enacted in late 1930s after the completion of the drainage works of Lake Yiannitsa. Subsequent land distribution programs, although on a smaller scale, provided additional state expropriated land in the mid 1950s and 1960s.

In all of the land distribution programs, the land was distributed according to the number of persons supported by the family. In addition, if the recipient of state expropriated land was expecting to receive a parcel of land through inheritance from his parents, that amount of land was subtracted from the amount of land he was qualified to receive. Thus, equity was the main concern of the land distribution program.

Equity in land ownership was frequently pushed to extremes. The land to be distributed was classified into as many as five categories according to the fertility and quality of the soil. Farmers were given plots of land by drawing lots. There were two or three categories of land. and those receiving higher quality land were given fewer hectares than those receiving land of a lower quality.

Following World War II, access to land ownership through inheritance and marriage became more common. Under the Greek inheritance law, land property is divided between the spouse and the children upon the owner's death. Another equal division of land takes place between the children upon the death of the surviving parent. This process naturally leads to fragmentation of land over time, and this is the reason for the highly fragmented holdings in Agios Loukas in

1961 (Table 15).

In the past, daughters and sons received an equal portion of the farm estate. Today, families with one or more sons who are already in the farming business or plan to enter it, avoid giving the land to their daughters. Instead they give them cash money or buy the furniture and appliances for when they marry and establish their new homes. At the same time daughters are asked to sign documents before a public notary certifying that they have received their share of the parental property and resign any claims in the future. Farmers and their sons justify this practice on the grounds that the land owned is so small that it should not be divided among more than two persons.

Buying land is another means of securing land. This is done mainly to expand an already established holding rather than for starting a new business. Farmers with two sons who plan to farm buy land when they can in order to provide each one with enough to start. Transactions of land are carried out mainly with relatives. Those who sell their land usually offer it to relatives and only if they are not interested will they search for another buyer. Presently, with prices of land at high levels, only the wealthier farmers can buy additional land.

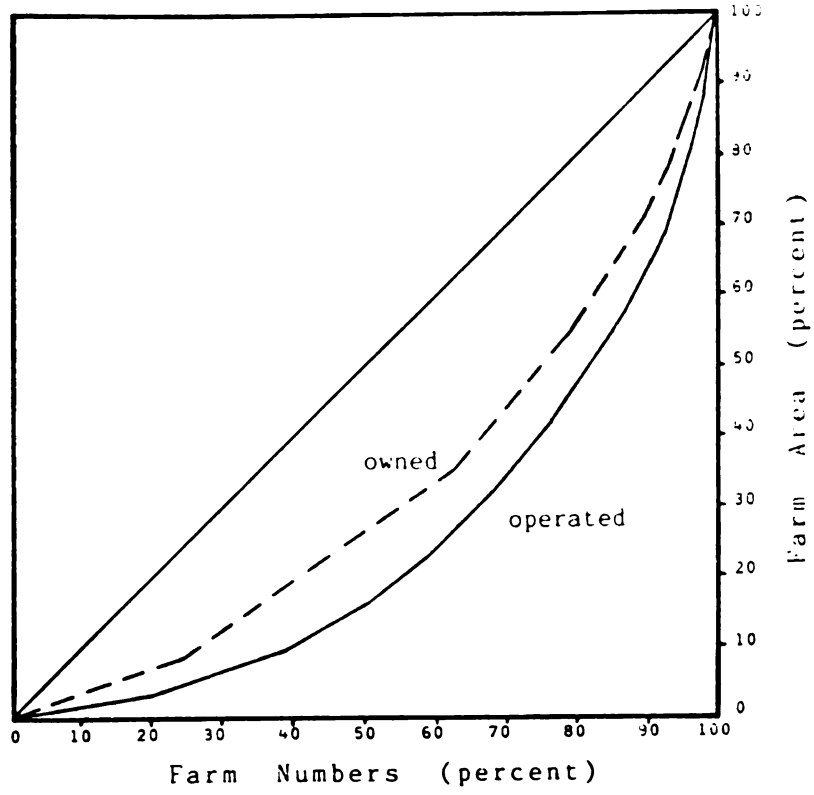
Of the 237 agricultural operations enumerated in the 1961 census, 136 or 57.4 percent owned part or all of the land they farmed (Table 18). The average area owned was 2.3 hectares, and the total area farmed (owned and rented) was 2.7 hectares. By 1981 the average area owned decreased

slightly to 2.2 hectares but area owned by all farm operations increased by 26.8 percent. A greater increase (29.4 percent) in the number of farm operations with land ownership was the reason for this small decline in the average area owned. This in turn was caused by the expropriation of a large estate owned by the School Board of Yiannitsa, and the allocation of pieces of land to landless farmers in Agios Loukas. Thus, the total amount of cultivated land in 1981 was 62.6 percent greater than the average cultivated land in 1961 (2.7 hectares) due to increases in the rented in land practiced by half (51.1 percent) of the farm operations in 1981.

As already mentioned, aggregate data in the 1961 and 1981 agricultural censuses do not reveal an increase in the ownership of land per farm operation but rather an increased equity. By 1981 practically all (99.4 percent) of the farm operations owned some land, as compared to only 57.4 percent in 1961. The Lorenz curves estimated using 1981 census data (Figure 11) indicate that land is much more equally distributed in terms of ownership than in terms of operation (owned plus rented land). The Gini coefficient computed was 0.36 for owned land and 0.50 for operated land.

The median size of cultivated land per farm operation in 1981 was 2.9 hectares. Using that figure as a cutting point, we classified the agricultural operations with cultivated land of more than 2.9 hectares as "large farms", and those cultivating up to 2.9 hectares as "small farms".

A closer examination of the latter group revealed that



Measures of dispersion:

	Owned
Gini	0.36
Kurtosis*	3.65
Skewness*	1.73

	Operated
Gini	0.50
Kurtosis*	20.52
Skewness*	3.62

Figure 11. Distribution of Owned and Operated Land by Agios Loukas Farmers, 1981

it was not a homogenious group, but rather a mixture of several groups (farmers with an off-farm activity, widower farmers and farmers of retirement age). With the expectation that scale of operation and commodity structure is related to off-farm work and stage in the life cycle we classified the 89 "small farms" into four groups, as follows:

-"full-time small farms": operated by a male with no off-farm work and below 65 years of age.

-"part-time farms": operated by a male of less than 65 years of age and with an off-farm work.

-"women operated": all farms operated by a woman.

(*) refers to area

-"retired farms": operated by a male over 65 years old.

Analysis of several characteristics recorded in the 1981 census of agriculture reveals some striking differences among the five groups delineated (Tables 21 and 22).

With regard to land ownership we observe that "large farms" owned twice as much land as "full-time small farms", and three times as much as each of the other three groups ("part-time farms", "women operators", and "retired farms").

Land distribution becomes very unevenly distributed when rented land is added to owned land. Those who own land also rent much more land. Thus, "large farms" operate four times more land as "full-time small farms", five times more land than "part-time farms" and "retired farms", and almost seven times more than "women operators".

Analysis of the commodity structure of the five groups also reveals striking differences. "Large farms" cultivate more tobacco (41.4 percent) and corn (20.0 percent), while "full-time small farms", with the exception of fruit trees (29.4 percent) and wheat (17.6 percent), cultivate a little of everything.

In summary, substantial concentration of land ownership has taken place in Agios Loukas over the last fifteen years. This has been further exaggerated by the rental of additional land. It seems that those who own more land are in better financial position to rent even more land.

Althoughthere are no available data on land ownership distribution at the time of the introduction of burley tobacco, analysis of commodity production patterns among the

Table 21. Structural Characteristics of Various Types of Farms, Agios Loukas, 1981.

	Large farms	Full-time small farms	Part-time farms	Women operated	Retired farms	All farms
		1. Numbers				
Number of farms	88	34	42	7	8	179
Mean age of operator (years)	48.7	47.3	46.7	50.6	72.9	49.2
Number of tractors	103	10	1	1	4	119
Horse Power (*)	4.4	1.2	0.1	0.4	1.6	2.5
Mean hectares of:						
Owned land	3.2	1.5	1.1	1.1	1.3	2.2
Rented in land	4.3	0.2	0.2	-	-	2.2
Operated land	7.5	1.7	1.3	1.1	1.3	4.4
Mean livestock units	2.0	2.3	0.3	0.2	0.7	1.6
		2. Indices or Percentages				
Number of farms	49.1	19.0	23.5	3.9	4.5	100.0
Mean age of operator	99	96	93	103	148	100
Number of tractors	86.6	8.4	0.8	0.8	3.4	100.0
Horse power	176	48	4	16	64	100
Mean hectares of:						
Owned land	42.7	88.2	84.6	100.0	100.0	50.0
Rented in land	57.3	11.8	15.4	-	-	50.0
Operated land	100.0	100.0	100.0	100.0	100.0	100.0
Mean livestock units	125	144	19	13	44	100

SOURCE: N.S.S.G. 1981 Census of Agriculture. Analysis by the Author.

(*) based on the following scale:

1 = tractor with power of 1-24 HP
2 = " " " " 25-34 HP
3 = " " " " 35-50 HP
4 = " " " " 51-79 HP
5 = " " " " 80 HP and over

Table 22. Crops Grown on Various Types of Farms, Agios Loukas, 1981.

Crops	Large farms	Full-time small farms	Part-time farms	Women operated	Retired farms	All farms
		1. Hectares				
Wheat	0.6	0.3	0.3	0.2	0.6	0.5
Maize	1.5	0.2	0.3	0.2	0.05	0.8
Sugar beets	0.6	0.1	0.01	-	-	0.3
Vegetables	0.6	0.2	0.07	-	0.05	0.3
Tobacco	3.1	0.2	0.08	0.3	0.1	1.6
Fruit Trees	0.7	0.5	0.4	0.4	0.3	0.5
All other crops	0.4	0.2	0.14	-	0.2	0.4
All crops	7.5	1.7	1.3	1.1	1.3	4.4
		2. Percentages				
Wheat	8.0	17.6	23.1	18.2	46.2	11.3
Maize	20.0	11.8	23.1	18.2	3.8	18.2
Sugar beets	8.0	5.8	0.7	-	-	6.8
Vegetables	8.0	11.8	5.4	-	3.8	6.8
Tobacco	41.4	11.8	6.1	27.3	7.7	36.4
Fruit trees	9.3	29.4	30.8	36.3	23.1	11.4
All other crops	5.3	11.8	10.8	-	15.4	9.1
All crops	100.0	100.0	100.0	100.0	100.0	100.0

SOURCE: N.S.S.G. 1981 Census of Agriculture, Analysis by the Author.

five groups of farms delineated ("large farms", "full-time small farms", "part-time farms", "women operators", and "retired farms") suggests that tobacco production is carried out mainly by those having large farms. Large farmers are in a good position to obtain land loans, or to use their own savings to acquire, or rent additional land offered by those who have left farming, or those who farm other crops (out of season vegetables, asparagus) in part of their land and lease out the remaining land.

4. Impacts on Labor Patterns

The labor required to perform the various tasks associated with crop production has been and is supplied by the farm operator, members of his family, hired workers and reciprocal labor exchange arrangements. With the introduction and rapid expansion of burley tobacco as a cash crop, however, the relative importance of these sources of labor supply has been greatly altered.

4.1 Demand for Human Labor

Each crop is characterized by different labor requirements. Table 23 shows the per stremma[1] labor requirements for the eight most important crops of Agios Loukas as determined from sample surveys carried out in Northern Greece during the last 25 years (Kitsopanidis, G.J., and Martika, M. 1982:5,7,9,11; Kitsopanidis, G.J., et al 1980:140; and Kitsopanidis, G.J., et al. 1982:6). The large samples used for most of the crops studied, plus the fact that the farms which participated in the survey were randomly selected, makes these findings valid for comparative purposes for other areas in the region.

As noted (Table 23), the per stremma labor requirements dropped substantially from 1955 to 1981. The increased use

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(1) One stremma is equal to one-tenth of an hectare or one-fourth of an acre.

Table 23. Changes in Labor Requirements of Selected Crops, Greece, Averages, 1955-58, 1965-66. 1965-68, 1974-75, 1978-80, 1980-81, Hours per Stremma.

Crop:	1955 to 1958	1965 to 1966	1965 to 1968	1974 to 1975	1978 to 1980	1980 to 1981	1978-81 Labor requirements relative to wheat
			1. Hours Required				
Burley tobacco	na	na	273.4	na	167.1	na	104
Peaches	96.1	na	92.0	na	75.6	na	47
Canning tomatoes	na	na	na	na	82.1	na	51
Maize	na	na	33.7	19.5	11.4	na	7
Cotton	110.0	na	67.7	56.9	43.7	na	27
Sugar beets	na	91.3	na	41.0	30.6	19.2	19
Alfalfa	na	na	22.1	15.4	12.6	na	8
Wheat (soft)	18.0	na	4.0	5.4	1.6	na	1
			2. Indices				
Burley tobacco	-	-	100	-	61	-	
Peaches	100	-	96	-	79	-	
Canning tomatoes	-	-	-	-	100	-	
Maize	-	-	100	58	34	-	
Cotton	100	-	62	52	40	-	
Sugar beets	-	100	-	45	34	21	
Alfalfa	-	-	100	70	57	-	
Wheat(soft)	100	-	22	30	9	-	

SOURCE: (a) Kitsopanidis, G., and Martika M. 1982. Pp. 5-11.

(b) Kitsopanidis, G. et al. 1982. Pp. 6.

(c) Kitsopanidis, G. et al. 1980. Pp. 140.

na = not available

of machinery and herbicides were the main reasons for these dramatic declines. Labor requirements for wheat and other small grains exhibited the greatest decreases-- less than one tenth by 1978-80 of the 1955-58 labor requirements. By 1978-80, cotton, sugar beets, and maize required only one third of the labor required in 1955-58, 1965-66, and 1965-68, respectively. Labor requirements for alfalfa in 1977-78 dropped to about half of the labor required in 1965-68. Labor requirements for burley tobacco were reduced in 1977-80 by almost 40 percent of the 1965-68 labor requirements. Finally, production of peaches exhibited the smallest reduction in labor requirements; labor requirements for peaches were 21.3 percent less in 1978-80 than in 1955-58.

Despite such tremendous reductions in labor requirements over the period 1955-1981, relative differences are still rather big between the various crops. For some (e.g., burley tobacco) relative differences in labor requirements became even greater. Using the labor requirements of wheat production in 1978-81 as a yardstick, we estimated the relative requirements of the remaining seven crops (Table 23). Burley tobacco holds the lead (104 times the labor requirements of wheat), followed by canning tomatoes (51 times), and by peaches (47 times). Next comes cotton (27 times). Finally, maize and alfalfa were less demanding crops in terms of labor (only 7 and 8 times the labor requirements of wheat, respectively).

A breakdown of the per stremma requirements of burley tobacco for the various operations involved reveales the

Table 24. Change in Labor Requirements of Burley Tobacco Production Between 1965-68 and 1978-80, Greece, Averages, Hours per Stremma(1)

Operation:	1965-68		1978-80		Change	
	Hours	%	Hours	%	Hours	%
Seedbeds	8.7	3.2	6.2	3.7	2.5	-28.7
Soil preparation and fertilization	3.1	1.1	2.4	1.4	0.7	-22.6
Transplanting	31.8	11.6	11.0	6.6	20.8	-65.4
Inter-row cultivations	27.7	10.1	20.4	12.2	7.3	-26.4
Spraying	3.0	1.1	0.7	0.4	2.3	-76.7
Irrigation	8.1	3.0	7.0	4.2	1.1	-13.6
Hand harvesting and stringing	125.2	45.8	94.2	56.4	31.0	-24.8
Curing and bulking	65.8	24.1	25.2	15.1	40.6	-61.7
Total labor	273.4	100.0	167.1	100.0	106.3	-38.9

SOURCE: Kitsopanidis, G. J., and Martika, M. 1982. Evolution and Productivity of Various Crop and Livestock Enterprises During the 25 Year Period 1955-1980 Thessaloniki, Greece: Department of Agricultural Economics Research, Aristotelian University of Thessaloniki, Pp 9

(1) data derived from the analysis of 54 burley tobacco enterprises in 1965-68 and 73 in 1978-80

specific operations of which substantial reductions were realized from 1965-68 to 1978-80 (Table 24). In terms of hours, the most savings were realized in curing and bulking.

The Italian burley crop in 1971, as I noted, started receiving heavy subsidies as part of the Common Agricultural Policy (CAP) of the EEC countries. Consequently, Greek burley tobacco lost its competitive edge on the European

markets, and exports suffered severe setbacks.

In an effort to reduce production costs. and improve profits, the Greek Tobacco Board ended the "tying" provision for burley tobacco. as Paraskevopoulos (1971:13-14) among others suggested. Previously, dried leaves had to be tied into small bundles called "matsakia" by tobacco growers in Agios Loukas. This method was highly labor intensive. Its replacement by a lower labor demanding method resulted in savings of 40.6 man-hours or 61.7 percent of the 1965-68 labor needed for curing and bulking.

The introduction of mechanical transplanters resulted in savings of 20.8 man-hours or 65.4 percent of the labor needed for transplanting in 1965-68. The labor requirements for hand harvesting and stringing was also reduced by reductions in the number of leaf harvests and the introduction of string aiding machinery. No mechanical harvesters have been introduced thus far for this operation, which remains the greatest labor demanding task, amounting to 56.4 percent of the total labor required to produce one stremma of tobacco (Table 24). Finally, the increased use of tillage equipment, along with increased adoption of herbicides has resulted in an additional 7.3 man-hour savings for inter-row cultivations.

Seasonal variations in labor inputs also changed dramatically from 1965-68 to 1981 (Figure 12). Instead of the three labor peaks (May, September and December) evidenced in 1965-68, changed technology in burley production resulted in concentrating the labor inputs in a two to three-month

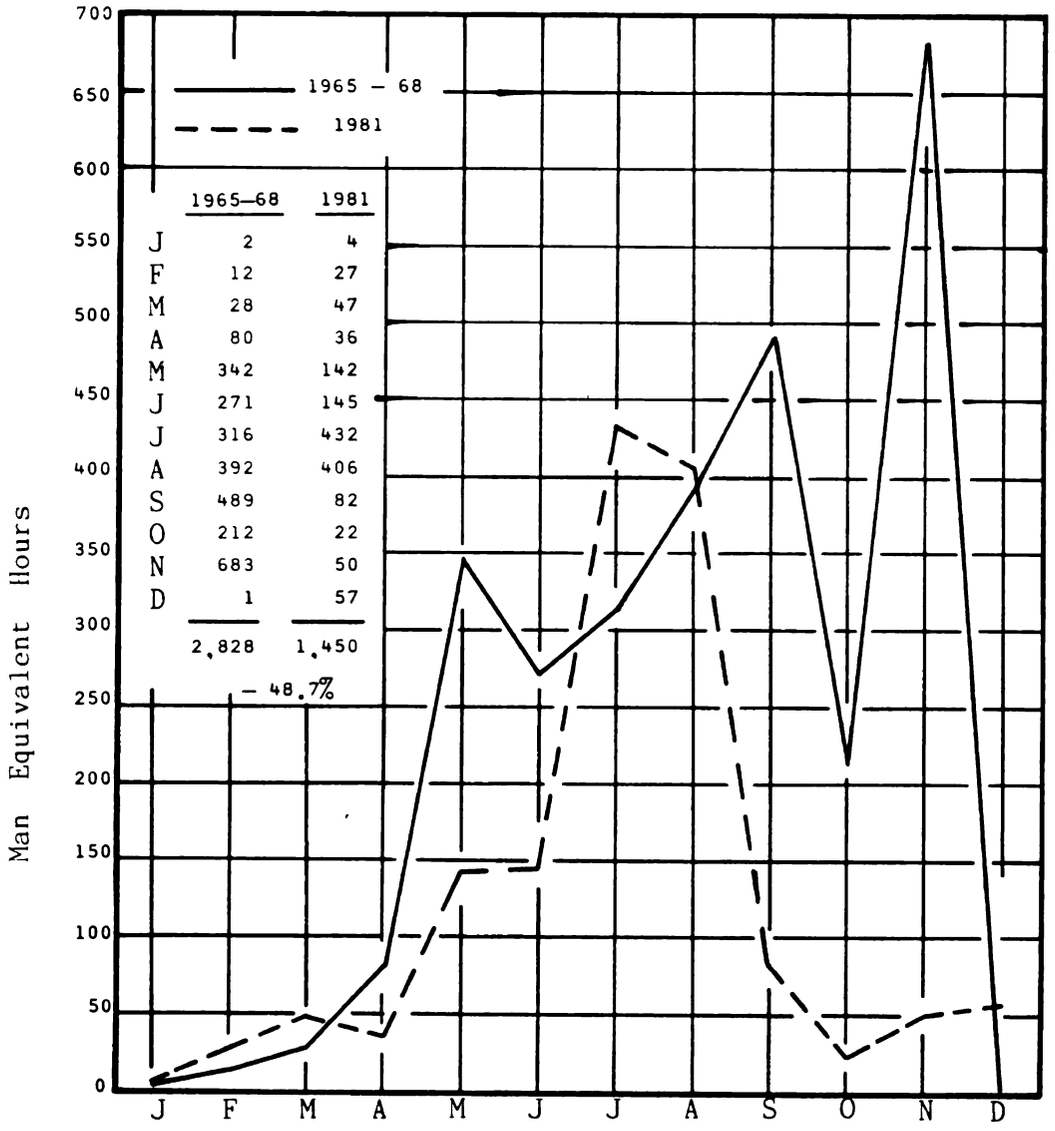

Figure 12. Changes in the Annual Distribution of Labor Inputs in Man Equivalent Hours (1) per Hectare of Burley Tobacco Between 1965-68 (2) and 1981 (3).

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(1) only for 1965-68.

(2) from Kitsopanidis, G., and Martika M. (1972). Refers to tobacco farms yielding 3.01 to 3.50 tons per hectare.

(3) from Galanis, N. 1981, Pp. 77.

period (mid-June to mid-September).

Table 25. Impacts of Labor Saving Technologies (Machinery, Chemicals) on the Labor Deficits of a 1-, 2-, and 4-hectare Tobacco Operations Having 2.5 Family Workers.

Type of Labor	Period/ Year	One hectare	Two hectares	Four hectares
Required	1965-68	2,828	5,656	11,312
	1981	1,450	2,900	5,800
Supplied	1965-68	2,828	4,778	5,742
	1981	1,450	2,724	3,948
Deficit	1965-68	-	878	5,570
	1981	-	176	1,852
Deficit as percentage of supplied labor	1965-68	.0	18.4	97.4
	1981	.0	6.5	46.9

SOURCE: Estimations by the author based on data presented in Figure 12

It is interesting to examine whether labor-saving technology has helped small tobacco farms (assuming that they were able to utilize this new technology) to become less dependent on hired labor. For 2.5 family workers --the average number of family workers on farm in Agios Loukas-- the monthly supply of family labor is: 2.5 workers x 30 days x 10 hours per day = 750 hours. Using the data of Figure 12 the following results are obtained for 1, 2, and 4-hectare tobacco operations (Table 25).

From these data, it is shown that 2-hectare farms (the average size of most family tobacco operations) are the least to gain from the new labor-shaving technology. Their dependence on hired labor dropped from 18.4 percent of the

supplied labor in 1965-68 to 6.5 percent in 1981. Actually, those small labor deficits could be covered easily by labor exchange arrangements commonly practised among small tobacco operations. On the contrary, large tobacco farms (4 hectares and over) were able to realize substantial savings on hired labor. While 4-hectare tobacco farms required almost as much hired labor in 1965-68 as they themselves provided, in 1981 they required slightly less than half of the labor provided by the family.

Therefore one has to conclude that labor savings brought about by the new technology were higher for larger tobacco farms than for smaller tobacco farms. Put another way, smaller farms investing in new technology had to expand their scale of operation in order to realize the benefits associated with it.

Did agricultural production in Agios loukas become more labor intensive over the past decade? Certainly the decade is characterized by an expansion in the cultivation of tobacco, one of the most labor intensive crops.

According to the data (Table 26), while both labor requirements for the entire village of Agios Loukas and hectares farmed remained about the same, hours per agricultural worker increased by 23.1 percent between 1970 and 1981. At the same time, there was a 19.5 percent decline in the agricultural labor force.

During the same period characterized by significant decreases in the per stremma labor requirements of crops, another trend was under way. That is, the replacement of

Table 26. Change in the Intensity of the Production System of Agios Loukas in Terms of Labor, Selected Years 1970, 1981, and 1982.

	1970	1981	1982	Change (%) 1971/81	Change (%) 1971/82
Cultivated hectares	752.6*	785.3**	750.0*	4.3	-0.3
Hours of labor required ('000)	675.4	672.1	472.4	-0.5	-30.1
Agricultural labor force	542	438	438	-19.2	-19.2
Hectares per worker	1.39	1.79	1.71	28.8	23.0
Hours per worker	1,246	1,534	1,079	23.1	-13.4
Hours per hectare	897	856	630	-4.6	-29.8

SOURCE: Estimated by the author based on crops cultivated and per hectare hours of labor required for each particular crop.

(*) Within the village farming area

(**) All areas as reported in the 1981 agricultural census

labor extensive crops by labor intensive crops. Therefore, in order to answer the question whether agricultural production in Agios Loukas became more labor intensive we have to screen out the effects of each of the two opposing trends; the trend towards more intensive crops and the trend towards lower labor requirements due to the introduction of labor saving technologies.

The necessary estimates were derived using the following formula:

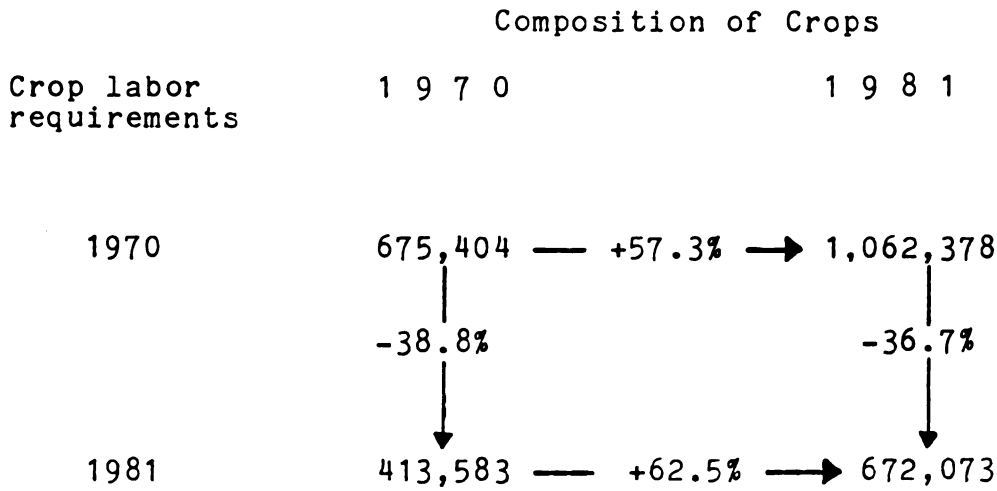

Figure 13. Schematic Representation of Total Man-hours Required in Agios Loukas in 1970 and 1981.

$$\left[\begin{array}{l}\text{Estimated annual village labor requirements at a given year } t_i\end{array}\right] = \left[\begin{array}{c}\text{Stremmas of land in crop}_i \text{ at year } t_i\end{array}\right] \times \left[\begin{array}{c}\text{Per stremma annual labor requirements of crop}_i \text{ at year } t_i\end{array}\right]$$

Computations were made for two specific years, 1970 and 1981, for which data were available on crops planted and per stremma labor requirements for each crop; as follows:

Multiplying the area occupied by each crop in 1970, denoted as (A_{70}), with its respective per stremma labor requirements in 1970, denoted as (L_{70}), and taking the sum, we obtained $\Sigma A_{70}L_{70}$=675,404 hours. This is the number of man-hours required in 1970 to farm the 752.6 hectares of crops in Agios Loukas. A similar calculation, but using the 1981 labor requirements (L_{81}), gave the sum of $\Sigma A_{70}L_{81}$=413,583. This means that if farmers in Agios Loukas cultivated exactly the same crops in 1981, they would have required 413,583 hours or 38.8 percent less hours than was

required in 1970 for the same crops. Therefore the labor saving methods used throughout the period 1970-1981 resulted in a 38.8 percent reduction in the labor required if crop structure remained unchanged between 1971-81 (Figure 13). Instead the farmers in Agios Loukas actually required 672,073 hours to cultivate the crops in production in 1981 $\Sigma A_{81}L_{81}$ = 672,073 man-hours. If there were no reductions between 1970-1981 in the labor requirements of the crops produced. it is estimated that farmers in Agios Loukas would require $\Sigma A_{81}L_{70}$=1,062,378 man-hours or 57.3 percent more of the total labor required in 1970 (Figure 12). But actually this had been reduced by 36.7 percent to 672,073 man-hours. It seems, therefore, that whatever was saved through the new technology introduced (machinery, chemicals) it was offset by equal increases in the cultivation of more labor intensive crops (e.g., tobacco).

The calculations made concerning changes in the labor requirements of the village between 1970 and 1981 rest upon the assumption that outside labor was not hired or hired labor remained unchanged during the two periods compared. This is not a safe assumption because as the village was expanding its tobacco area, the need for additional labor also increased. Further, because increases in tobacco production were not equal across all the farms of the village, reliance upon hired labor became even more proncunced.

Therefore, one must conclude that despite the 23.1 percent increase in the labor requirements per agricultural worker between 1970 and 1980, the actual work load of the

average agricultural worker in Agios Loukas remained the same or decreased. Unfortunately, due to the fact that data on hired workers is not available, we are unable to provide a better estimate of the work load of the average farm worker between 1970 and 1981.

In summary, despite a substantial decline in the number of agricultural workers between 1970-81, and a significant increase in the cultivation of labor intensive crops, the work load of the average agricultural worker in Agios Loukas remained the same or probably declined due to the labor saving technology used (machinery, chemicals etc), and the increased employment of non-village farm workers.

4.2 Family Labor

The agricultural labor force in Agios Loukas declined by 19.2 percent between 1970 and 1981. The 438 persons (254 males and 184 females) in the agricultural labor force by 1981 represent 41.6 percent of the total population. The median age of the laborers is about 40 years, for both males and females --three years younger than the national agricultural labor force of 1971, and much younger if similar data were available for the 1981 national agricultural labor force (Table 27). Persons 65 years of age and over. who still participate in farm activities, account for only 4.8 percent of the total labor force in Agios Loukas, compared with 10.3 percent for the national agricultural labor force.

Table 27. Agricultural Labor Force of Agios Loukas by Age, 1981.

Age groupings	Males		Females		Total		Greece 1971
	Number	%	Number	%	Number	%	%
10 - 14	5	2.0	4	2.2	9	2.1	2.7
15 - 19	15	5.9	15	8.1	30	6.9	6.6
20 - 24	26	10.2	18	9.8	44	10.0	5.2
25 - 29	30	11.8	13	7.1	43	9.8	5.9
30 - 39	19	7.5	19	10.3	38	8.7	8.9
35 - 44	50	19.7	38	20.7	88	20.1	23.6
45 - 54	62	24.4	59	32.1	121	27.6	18.3
55 - 64	29	11.4	15	8.1	44	10.0	18.5
65 and over	18	7.1	3	1.6	21	4.8	10.3
Total	254	100.0	184	100.0	438	100.0	100.0
Median age	40.40		40.05		40.25		42.77

SOURCE: N.S.S.G. 1981 Census of Agriculture, Analysis by the author

Table 28. Farm Operators by Age, Agios Loukas 1981, and Greece 1977/78.

Age groupings	Agios Loukas (1981)		Greece (1977/78)
(years)	Number	%	%
Up to 14	-	-	0.01
15 - 24	1	0.6	0.2
25 - 44	64	35.8	22.7
45 - 64	96	53.6	47.2
65 and over	18	10.0	29.9
Total	179	100.0	100.0
Median age	48.81 years		56.5 years

SOURCE: (a) N.S.S.G. 1981 Census of Agriculture. Analysis by the author

(b) Table 7

The differences in age composition between Agios Loukas and rural Greece in general are even more pronounced when the age of heads of agricultural operations is considered. Those who operate the farms in Agios Loukas are 7.7 years younger than the national population of farm operators (Table 28).

An overwhelming majority, 69.7 percent, of the persons participating in the agricultural labor force work exclusively on their own family farm. Another 9.4 percent, in addition to providing labor for their farm, work as hired workers on other farms. Only a small percentage (0.7 percent) works off-farm as well as providing labor ocassionally on their own farm, and other farms.

Many people in addition to farming, also have an off-farm vocation. Those persons, often called "part-time farm workers" account for 16.8 percent of the total number of persons who declared a work activity during the one year period preceding the 1981 census of agriculture.

Persons who could be classified as farm workers account for 1.4 percent or, if we add persons who worked both on other farms and off-farm activities,[1] 1.6 percent. Finally, personswith only an off-farm activity represent 1.8 percent of the total (Table 29).

A further breakdown in terms of relationship to the head of the farm household reveals some noteworthy patterns.

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(1) The agricultural census underrepresents those who work exclusively on other farms as hired workers, since only those who farm at least one stremma of land and/or tend a certain number of animals are qualified to participate in the agricultural census.

Table 29. Distribution of the Farm Family Members According to the Allocation of Their Labor to Family Farm, Other Farms, and Off-farm Work, Agios Loukas, 1981

	F*	FO	FON	FN	O	ON	N	Total
			1. Number of Persons					
1. Operator								
Male	113	14	2	43	-	-	-	172
Female	3	3	-	1	-	-	-	7
2. Female Spouse	99	13	-	11	4	-	4	131
3. Others								
Male	57	7	1	15	1	1	2	84
Female	39	5	-	5	1	-	2	52
All persons	311	42	3	75	6	1	8	446
Male	170	21	3	58	1	1	2	256
Female	141	21	-	17	5	-	6	190
			2. Percentages					
1. Operator								
Male	65.7	8.1	1.2	25.0	-	-	-	100.0
Female	42.9	42.8	-	14.3	-	-	-	100.0
2. Female Spouse	75.6	9.9	-	8.4	3.0	-	3.1	100.0
3. Others								
Male	67.9	8.3	1.2	17.8	1.2	1.2	2.4	100.0
Female	75.0	9.6	-	9.6	1.9	-	3.9	100.0
All persons	69.7	9.4	0.7	16.8	1.4	0.2	1.8	100.0
Male	66.4	8.2	1.2	22.6	0.4	0.4	0.8	100.0
Female	74.2	11.1	-	8.9	2.6	-	3.2	100.0

SOURCE: N.S.S.G. 1981 Oensus of Agriculture, Analysis by the Author.

(*) F= labor allocated in family farm only.

FO= " " " " " and other farms.

FON= " " " " " other farms and off-farm work.

FN= labor allocated in family farm and off-farm work.

O= " " only in other farms.

ON= " " in other farms and off-farm work.

N= " " only in off-farm work.

The practice of part-time farming is greater among heads of agricultural operations (25.0 percent)than for their spouses or other members of the family, and greater among males than among females. Work on other farms is more often done by female heads of agricultural operations than by male heads and, in general, more by female than male members of the agricultural labor force.

Working on other peoples' farms is perceived by local people as an indication of poverty, and especially for male heads, an indication of lacking personal abilities -- something an honest man should be ashamed of. Only those in real need of the extra income would resort to doing wage work for other farmers. This norm is presently being modified by the young people who seek such employment to raise money to be spent as they wish. As a young unmarried girl in her twenties pointed out:

> "My parents don't like it (her going to work on other farms when there is no work on their family farm), but I do not want to stay idle when there is work somewhere else. I am used to hard work. I don't want to ask them to give me money all the time. not because they won't give it to me, --they don't approve of what I am doing in the first place-- but because I like to work and raise my own money. Why are you doing this?, my parents ask. Are we not giving you enough money? Do you have any complaints for doing this?"

In terms of average days worked by farmers, their spouses, and other family members on the family farm or, other farms and in off-farm vocations. data presented in Table 30 provide some useful insights into the allocation of family labor in Agios Loukas.

Work inputs on family farms are higher for male heads

(162.7 days) than for other family members (131.3 days), and farmwives (120.1 days)[1]. Work inputs on other farms is greater for farm wives (108.5 days) followed by farm heads (98.7 days) and other members (79.4 days).

Off-farm work activities, carried out by farmers in 1981, average 180.2 days per year. Farm wives. doing off-farm work average 147.9 days, while other members average 122.3 days.

Most of the farms (87.7 percent) are owned and operated by a single nuclear family. The balance (12.3 percent) are operations involving extended families, usually a married couple with a married son or daughter or one or more unmarried siblings (Table C-4). In terms of persons engaged in farming, the two-person operation is the most common (43.0 percent), followed by the three-person operation (19.0 per cent), the one-person operation (17.9 percent) and the four-person operation (16.8 percent). Only 3.3 percent have five persons.

It would be interesting to examine whether higher levels of family labor enhance the scale of operation in general, and the area devoted to burley tobacco in

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(1) The labor contribution of farm wives and other members of the family were reported by the farm operators and most of them are male. While womens' labor does not include labor required for household chores, it is possible that husbands might underestimate their wives' contribution to farming. As Hill (1981:37) pointed out:
"The NORC-USDA survey (Jones and Rosenfeld. 1981) found that husbands and wives tended to agree by the extent of the wives' contributions but that husbands tended to report slightly lower levels of regular (as compared to occasional) task involvement for their wives than the wives reported for themselves".

Table 30. Mean Number of Days Worked on FamilyFarm, Other Farms, and Off-farm Work by Farmers, Their Spouses and Other Members of the Farm Household, Agios Loukas, 1981.

Family members	Family Farm		Other Farms		Off-farm work		All activities	
	Days	Index	Days	Index	Days	Index	Days	Index
Operator	161.8	115	98.7	103	180.2	115	217.5	123
Male	162.7	116	106.9	111	180.9	115	220.0	124
Female	110.0	78	55.0	57	150.0*	95	155.0	87
Female spouse	120.1	86	108.5	113	147.9	94	143.7	81
Others	131.3	94	79.4	83	122.3	78	157.2	89
Male	134.9	96	81.0	84	108.9	69	162.8	92
Female	125.2	89	76.7	80	158.6	101	148.2	83
All members	140.3	100	96.0	100	157.3	100	177.4	100
Male	153.9	110	96.9	101	159.5	101	201.2	113
Female	121.1	86	95.0	99	151.2	96	145.4	82

SOURCE: N.S.S.G. 1981 Census of Agriculture. Analysis by the Author.

(*) mean derived from one case only.

particular. The results obtained and presented in Table 31 are not conclusive. While the area of both burley tobacco and total cultivated area increases with subsequent increases in the number of family farm workers up to 3 persons, thereafter the relationship reverses. Both the largest average area farmed (7.02 hectares) and the largest average area of tobacco (2.85 hectares), appear on farms with 3 family members employed in agriculture. Those figures are 60 percent greater for the cultivated land, and 78 percent greater for tobacco production than the respective area of the average village farm.

Table 31. Relationship Between Size of Family's Agricultural Labor Force and Both Area in Burley Tobacco and Total Cultivated Area, Agios Loukas, 1981

Number of family workers	Number of farms	Average hectares in: Tobacco Hectares	Tobacco Index	Cultivated land Hectares	Cultivated land Index
1	32	0.78 (0.24)*	49	2.53 (0.40)	58
2	77	1.17 (0.30)	73	3.71 (0.99)	85
3	34	2.85 (0.57)	178	7.02 (1.21)	160
4	30	2.02 (0.25)	126	4.73 (0.52)	108
5	6	2.42 (0.23)	151	6.45 (0.75)	147
Average farm (2.45)	179	1.60 (0.37)	100	4.39 (0.92)	100

SOURCE: N.S.S.G. 1981 Census of Agriculture, Analysis by the Author

(*) numbers in parentheses represent the standard error of the mean

The lack of a clear positive association between the size of a family's labor force, and the scale of operation might be considered an indication of the declining role played by family labor. This is not the case even for tobacco production, which is a high labor demanding crop. It seems that other factors, besides family labor, are more important in increasing the scale of operation of the farms in Agios Loukas.

Turning back to the issue of the housewives' contribution to farming, I tried to determine whether farms with a farm wife not engaged in farming differ substantially from

Table 32. Relationship Between Farmwives' Participation in Farming and Certain Characteristics of the Farm Operation, Agios Loukas, 1981.

	Farmwife works in the farm	Farmwife does not work* in the farm	All farms
Number of operations	131	48	179
Mean hectares in tobacco	1.7	1.4	1.6
Mean age of the operator (years)	48.3	51.6	49.1
Mean hectares of land:			
Owned	2.1	2.4	2.2
Rented	2.4	1.6	2.2
Cultivated	4.5	4.0	4.4

SOURCE: N.S.S.G. 1981 Census of Agriculture. Analysis by the Author.

(*) cases with a deceased farmwife are also included.

those which depend on the farm wife for a portion of the family's labor devoted to farming. The results are presented in Table 32.

The overwhelming majority of farm wives (73.2 percent work on the family farm. Those farms grew 0.3 hectares more tobacco, had a younger farm operator (about 3 years), owned 0.3 hectares less land, but rented more land (0.8hectares). As a result they farmed 0.5 hectares more than farms where the farm wife was not active in farming.

Shifting from farmwives to women in general, we tried to find out whether increases in the scale of operation result in greater work loads for male and female family workers. Furthermore, we tried to examine whether shifts in

the allocation of labor among the family farm, other farms, and off-farm work are associated with increases in the scale of the operation. The results of the analysis carried out are presented in Table 33.

Work inputs on the family farm for both men and women increase for every increase in the scale of operation up to 4.1 to 6.0 hectares. Thereafter. labor provided on the family farm decreases, for both men and women,with the exception of farms of over 8 hectares on which women's labor increases while men's decreases. Women's labor in relation to men's labor was 78.3 percent, ranging between 54.7 percent for the smaller farms and reaching 88.7 percent for the largest farms. If one considers the house keeping activities of farm women, one is inclined to conclude that women work more than men. at least on large size operations. The work of woen on other farms is 98 percent of the work supplied by men. Moreover. for farms operating 1.1 to 4.0 hectares ("small" to "average" farms) women work more as hired labor workers than do men.

Finally. off-farm work for women is higher than men on "average" to "small" farms, and smaller or even non-existent on "large" farms. On the average, the work of women in off-farm vocations is only 5.2 percent less than men's work input.

In summary, the agricultural labor force of the village declined between 1971 and 1981, but it was and still is younger than the national labor force. Furthermore, those who operate the farms, are much younger (about 8 years)

Table 33. Allocation of Labor of the Average Male and Female Family Worker in Farms of Various Sizes, Agios Loukas, 1981 (1).

Size of farm in hectares	Number of farms	Gender of worker	Family farm	Other farms	Off-farm
Up to 1.0	36	Male	76.3	142.9	172.4
		Female	41.7	116.1	128.3
		Ratio	54.7	81.2	74.4
1.1 - 2.0	34	Male	105.2	96.4	179.0
		Female	83.6	98.1	157.0
		Ratio	79.5	101.8	87.7
2.1 - 4.0	38	Male	135.8	81.1	142.3
		Female	104.1	100.0	204.0
		Ratio	74.5	123.3	143.4
4.1 - 6.0	29	Male	224.0	-	140.0
		Female	166.7	50.0*	-
		Ratio	74.4	-	-
6.1 - 8.0	20	Male	198.2	32.5	220.0*
		Female	157.1	30.0*	59.0**
		Ratio	79.3	92.3	26.8
Over 8.0	22	Male	194.1	50.0*	60.0
		Female	172.2	30.0**	-
		Ratio	88.7	60.0	-
All farms	179	Male	153.9	96.9	159.5
		Female	121.1	95.0	151.2
		Ratio	78.3	98.0	94.8

SOURCE: N.S.S.G. 1981 Census of Agriculture. Analysis by the Author.

(1) includes only those family workers who allocated their labor ineachof the three categories (family farm, other farms, and off-farm).

(*) mean derived from one case only

(**) mean derived from two cases only

than the national population of farm operators.

Family labor is mainly utilized on the family farm (69.7 percent). Another 16.8 percent of the labor force can be classified as "part-time farm workers", and 9.4 percent work on both their own farm and on other farms as hired workers. Those, who work exclusively as hired farm workers are less than 2 percent of the labor force. Part-time farming is more frequently practiced by farm operators than by their spouses or other members of the family. Work on other farms as paid workers is practised more by women rather than by men.

Most of the farms (87.7 percent) are owned and operated by a nuclear family. The two-person operation is the most common (43.0 percent), but those who farm the largest area and grow the largest tobacco crop are the three-person operations. followed by the five-person operation. It seems that size of family labor force is not the prime factor in determining the scale of operation, even for a labor intensive crop like burley tobacco.

Farms with the wife engaged in farming grow 21 percent more tobacco, own 12.5 percent less land but rented 75 percent more land than farms with an inactive wife in farming. Women's contribution to farming in terms of average days worked per year is only 21.7 percent lower than men's contribution. The scale of operation has incresingly affected the work load of women more so than that of men. In operations of more than 8 hectares the work load of women is only 11.3 percent less than men. Work on other farms and off-

farm vocations is almost equal for men and women, 98 percent and 94.8 percent, respectively, of men's inputs.

4.3 Hired Farm Workers

The high seasonality of labor demanded in agriculture. coupled with the expansion of burley tobacco, soon overan the capacity of family farms to supply their labor needs. Tobacco farms, especially those planting over two to three hectares, are in great need of ocassional hired labor to supplement their own labor. Today, inter-row cultivation, priming, and curing are the most labor intensive operations. Those in need of extra laborers have either to seek village workers and/or migrant farm workers visiting the village from April through September.

4.3.1 Village Farm Workers

The 1981 census reveals that only 6 persons (or 1.4 percent of the total agricultural labor force) work exclusively for hire and 46 persons (or 10.3 percent) work occasionally for hire. But the agricultural census underestimates the number of persons employed exclusively as hired workers. Local informants estimate the actual number to be about 15-20 persons --about three times greater than the census of 1981 would have us believe. Two distinct types (in terms of work tasks, compensation, and prestige) have

emerged during the last four to five years: the "farm workers" (georgoergates) and the "farm employees" (ipalili or epistates).

The village "farm workers"are composed mainly of women, paid on a daily basis, and hired for as long as there is work to be done. Since hired labor is in short supply. kin, friends and neighbors are given priority.

"Farm employees" are an entirely different and new group of laborers resembling in many ways the "peons" described by Peggy Bartlett (1983:47-50) in Costa Rica. They are hired on a seasonal or yearly basis by large tobacco producers under an oral agreement that specifies their monthly compensation. In addition, the tobacco grower plants half an hectare of tobacco for them and allows them to use his machinery on that plot of land with or without compensation, depending on the agreement. They are exclusively males who do not own enough land of their own and/or machinery. They are hired to operate the machinery and/or supervise the workers in the field and the curing barn. With their help some tobacco growers are freed of any manual labor, restricting themselves to managerial tasks only. As one large tobacco grower points out:

> "George, I do work. I am not shamed of working... Who is working here? I am the boss. they say. They are accustomed to working mainly with the help of employees".

For some aspiring farmers. such employment arrangements have facilitated their entry into farming. They gained experience and at the same time were able to raise the

capital needed to buy their own machinery and start their own farm business. Others hesitant to take risks, are still working for a monthly salary and expect to continue working in the future under the same arrangements. About ten persons are hired as "farm employees". If concentration in tobacco production increases in the future, their numbers will probably increase.

4.3.2 Migrant Farm Workers

Local informants estimate that about four to five hundred migrant workers of Turkish origin leave their villages in Thrace to reside in Agios Loukas from mid April to mid September. During this five-month period, each of them gets work for 100 to 120 days.

Using these figures, it is estimated that migrant workers put in between 40 to 60 thousand days in the village. This is almost as much labor as Agios Loukas farmers and their family members give to farming throughout the year, estimated for 1981 at 65,448 person-days (Table C-5). There is no doubt then that local informants are absolutely right when they emphasize the heavy dependence of the village upon hired labor.

> "We depend on migrant workers. Without them we would have to restrict tobacco to one hectare per family".

While the entire area of Yiannitsa, Skydra and Veria is short of labor, migrant workers prefer to visit Agios Loukas and other burley producing villages because they can be assured of the maximum number of working days. They come by

commuter buses, trains and some with their own pick-up vans.

Every building that can provide shelter (old houses, houses vacated by those who migrated abroad, unfinished homes, barns etc) is used during this period. Some big tobacco growers, like Alekos, have built special accomodations with a series of separate dwelling rooms next to each other and a coomon kitchen, restroom and washroom for the migrant families.

All large tobacco growers make an effort to provide shelter for as many workers as they regularly need. By doing so, they have priority claim for their laborers; when there is no work on their farms they are available for other farmers. In effect, the workers form a common labor pool for all farmers in the village.

Arrangements for the next year are made by the end of the growing season. If the tobacco grower is satisfied with the work performance of his crew members, he invites them to come again for the next growing season. This oral agreement is usually backed up with a down payment ranging from 100,000 to 300,000 drachmas (1,000 to 3,0000 U.S.D), depending on the amount of labor the particular crew chief is able to mobilize. Some of them, like Housein, having run out of money during mid-winter or having to meet an extra need (marriage of a daughter or purchase of a van) visit their tobacco grower, the "afentiko" (boss) as they call him. and ask him to provide the additional money.

> "I have already given him 130,000 drachmas in advance, Alekos explained to me. He asked me to resume work immediately (March 22nd). I told him that there was

> not much work to be done right now, but if he wants he can have the house and try to find work somewhere else. This year you won't leave me without work during transplanting, the visiting worker told Alekos. He comes every year with his wife and two grown children. They are good workers", Alekos remarked.

Payment in advance of some of the wages to be earned in the next year is not necessarily followed by an agreement on the eventual daily compensation. This is left to be negotiated when the work season begins.

Expansion of burley and competition for workers drove up the wages paid for hired labor. The average daily compensation rose from 110 drachmas in 1965-68 to 1,500 drachmas in 1983 or 17 times according to data obtained from production cost studies (By Kitsopanidis, G.J., and Martika. M., 1982; Argyropoulos, K. 1971) and local informants (Table 34). Wages paid for hired labor rose faster than inflation rates and tobacco prices, especially after the abolishment of the allotment program. While during 1965 to 1970 wages paid kept pace with inflation, by 1978-80 they were 47.4 percent higher and by 1983 wages paid were almost double what they would have been if they were based entirely on annual increases according to inflation.

Tobacco growers feel they are paying very high wages. Aristarchos grew 4 hectares of tobacco in the production year 1982-83, and 6 hectares in 1983-84. When asked if he planned to expand his production this year and in the coming years, he replied:

> "The biggest problem is the labor. George, if more tobacco growers expand their production, production costs are going to rise substantially. Today we are one hundread tobacco growers, for example. We plant X

Table 34. Changes in Days-wages Paid to Hired Workers, Agios Loukas, Selected Years, 1965-1983

Period/Year	Price Paid		Relative to Kg of Tobacco	Adjusted to Consumer Price Index	
	Drachmas	Index		Drachmas	(1)-(3)/(3)
	(1)	(2)		(3)	
1965-68	88	100	4.4	88	0.0
1969-70	100	114	5.3	100	0.0
1978-80	448	509	8.1	304	47.4
1982 /hoeing	1,000	1,136	6.0	572	92.3
1982 \priming	1,200	1,364	7.2		
1983 /hoeing	1,200	1,364	7.7	687	96.5
1983 \priming	1,500	1,705	9.6		

SOURCES: (a) Kitsopanidis, G.J., and Martika M., 1982
(b) Argyropoulos K., 1971
(c) Local informants

> hectares of tobacco. If everybody decides to double the area of tobacco, what is going to happen? We wouldn't be able to find workers. Two years ago we (the entire village) had 350 hectares of tobacco. The migrant workers were searching for employment during the hoeing of the fields. Last year when many new tobacco growers joined us, the area of tobacco reached 500 hectares and during hoeing migrant workers were asking 1,200 drachmas, 20 percent more than last year, and they weren't begging us for work."

Small farmers feel that they are squeezed out by large tobacco growers. When I asked Tasos, who plants two hectares of tobacco every year by relying exclusively on family labor, whether he plans to expand his tobacco operation, he replied:

> "No. It does not pay off, George. There are many wages to be paid. Last year they paid 1,100 drachmas per

> labor day. This year they paid 1,500 drachmas. The short-term cash loans we receive for tobacco production are not enough to finance the expenses... We give them (the workers) whatever they ask. The workers define the day's wages. We could tell them that we are not willing to give them the amount they are asking, but someone from the large tobacco growers will accept that day's wages and thereafter everyone else has to match it".

Many tobacco growers complain about the work performance of migrant workers.

> "They are lazy and you have to supervise them all the time. You can't leave them alone. You have to work yourself in the field among them during hoeing or priming to set the pace of work. At the same time you have to know how to deal with them. You can't push them too hard because they might pack up and leave in the middle of the harvest. Then it is impossible to find workers to finish the harvesting."

But farmers also give them credit for accepting the harsh and unhealthy conditions of their working environment. As Helias, pointed out:

> "During the curing process and especially during the yellowing stage (when the color of the tobacco leaf turns yellow), working conditions inside the curing barn are unbearable. After fifteen minutes of work you develop a headache and you feel like you are beening asphyxiated. You can't smoke a cigarette. It's amazing how the workers can endure these conditions".

Arif is one of the migrant workers who returned to the village this year. He first went to Avlona, Attika to harvest potatoes.

> "I had about 30.000 drachmas when I left my village with my family. Oh what weather. It was raining all the time. The potatoes started turning green. The cost of gas and food on the way left me with 22,000 drachmas. My brother-in-law and my cousin, with their families, had already been there for a month. We were given a storehouse to live in. We painted it and put in a stove. As soon as we arrived, my brother-in-law asked me to lend him 10,000 drachmas. My cousin asked me for 5,000 drachmas. I gave it to them and I was left with five thousand drachmas. There was no work.

> Food stores were not giving credit accounts. The boss wouldn't even give advances. If you don't work, I don't sell potatoes to the merchant. I can't give you payment in advance. I took a taxi, I found the bank and I withdraw 20.000 drachmas from my account. Very soon that money is gone too. You know we gamble a little bit. I don't say anything to my wife. My wife told me that her cousin was in Saint Thomas Village. I took the car and visited her. I asked her as soon as I arrived to lend me 10,000 drachmas and I would give it to her in Agios Loukas. I also asked her not to mention anything to my wife. She replied. I don't have ten thousand, but here is five thousand. I took the money and headed straight to gamble. I was lucky and as soon as I made 10 thousand I quit. I gave six thousand to my wife. Why didn't you head straight for Agios Loukas?, I said to myself. I call Takis (his "boss" in Agios Loukas). Is there a job for us Takis to come over there? Tomorrow I am going to start pulling plants from the seedbeds, he replied. I packed my things immediately and the same day I was in Agios Loukas. Takis, I said, I run out of money. I have only 4 thousand in my pocket. How much do you want?, Takis replied. Is 20 thousand enough?. Enough, I said and he hands me right away 20 thousand".

Arif and his crew worked eleven years for a tobacco grower in Yiannitsa. He explained the reasons for breaking this unusually long employment period with a single grower.

> "You know. The women are jealous and begin to slander each other. One woman might say something today, another woman something alse tomorrow and very soon the boss is left with half the job unfinished. The "parea" (working crew) broke up and I decided to come over here with my sister's family.

Arif is landless, like many of his fellow villagers. His father has 2.5 hectares but Arif is one of six heirs in his father's farm estate.

> "If I had at least one hectare I wouldn't have to come over here. I could grow half an hectare of sugar beets and half an hectare of canned tomatoes. But I don't have land".

From the 300,000 drachmas his family earns as hired laborers he gives 150,000 drachmas to his wife and keeps the other 150,000 drachmas for himself. His own expenses are

for gas and gambling!. "That's why I came to your village" he adds. "You have gambling here".

In summary, tobacco production in Agics Loukas is heavily dependent upon hired migrant workers. The longer employment period in Agios Loukas, as compared to other non-tobacco producing villages, is the reason migrant workers are attracted to the village. The expansion of burley production during the last three years has substantially increased the wages paid, for the supply of hired labor has not increased at the same pace. In the meantime, small tobacco growers are being squeezed out, and their relative position vis-à-vis the larger growers gets worse; as they cannot compete with them and pay the wages large farmers set.

4.4 Labor Exchange Arrangements

Labor exchange arrangements, called "sinergasia" or "parea" (plural sinergasies or parees) in Agios Loukas, constitute the third means of access to labor. Labor exchanges are informal, occur mainly among relatives and neighbors and center primarily on tobacco transplanting, hoeing and harvesting. They are practiced among small tobacco growers, who plant approximately the same hectares of tobacco.

The "parea" frequently breaks up and sometimes a farmer might join five different "parees" within a ten-year period. The change in the scale of operation of one of the

participants is the major cause for the breaking up of a "parea".

The most frequently practiced "sinergasia" is in tobacco transplanting. Sometimes the transplanting machine is owned in common by two or three farmers who form the "parea". As Achilleas, one of the local extension officers, explained:

> "It is not the cost of the machine that forces small tobacco growers to form a "parea", but the size of the crew required and the need to expand their employment opportunities. A four-row transplanting machine requires seven persons (four to feed the machine, one to operate the tractor that pulls the machine, one to walk behind the machine to fill unplanted spots or correct misplanted plants and another person to operate the second tractor bringing water and plants to the transplanting machine) or six persons in the case of a three-row transplanting machine. A crew of this size cannot be mobilized by anyone family in the area".

Another reason contributing to the formation of "parees" is the fact that not all tobacco seedlings are ready for transplanting at once. First, the big ones are pulled and planted, and pulling the rest is done a week later, in one or sometimes two stages. Therefore, two or three tobacco growers can cooperate by transplanting the grown seedlings of each one. By the time they finish planting them, the other seedlings are ready to be planted.

Besides the transplanting crew, several persons must pull the tobacco seedlings from the seedbeds. As Theofanis pointed out:

> "If we have enough seedlings pulled out, we can plant up to two hectares a day. The unavailable seedlings delay transplanting."

Frequently the transplanting crew joins the others in

pulling seedlings. Every member of the household --even the elderly and youngsters who participate minimally in farming -- are called upon to help at this stage.

Women also play an important role in the formation of "parees". The farmwives who visit each other daily after the completion of household chores are the main reason for the formation of the "parees" which do not follow kinship lines.

Another form of labor exchange arrangements is the so called "danika". Farm households with surplus labor in a particular period help others for a number of days in anticipation of reciprocal help at a later period in time. Such labor exchange schemes are beneficial to both parties involved, since they help to expand their employment opportunities.

This supportive network of helping obligations and expectations is presently undermined by the large tobacco growers. Molnar and Korsching (1983:299), referring to the consequences of concentrated ownership and control in the U.S. agriculture. noted that: "greater complexity and volume of decisions force (large) operators to conduct their affairs on a contractual basis to the fullest extent possible". Furthermore, they noted that "...helping arrangements and informal assistance norms are being supplanted by an agrarian service economy based on a monetary calculus of time and energy". According to Poole (1981), this trend may undermine traditional community relations.

5. Impacts on Capital Resources

Burley tobacco is one of the most intensive crops in terms of capital requirements (Table 35). As the area planted to burley tobacco increased, so did the need for additional capital to finance the production.

Farmers needed additional capital to pay rents and hired workers, buy the various inputs (fertilizers, pesticides, fuel and other materials) and either pay for machinery services or buy their own machinery. Generally,they had to build or expand the curing barn.

5.1 Cash Requirements

In 1978-80, the capital required for burley tobacco production was 6,534 drachmas per stremma or 5.6 times the capital needs of one stremma of wheat (Table 35). These figures include the capital needed to buy fertilizers, pesticides and gas. the payment made for machinery services and the depreciation and interest applied to the fixed capital employed (machinery, curing barn etc). What is left out are payments made for rented land and hired labor. These payments inflate the total sum of money, but unfortunately the data were not available (Kitsopanidis, G.J., and Martika, M. 1982; Kitsopanidis.G.J. et al, 1982).

Argyropoulos (1971:34), using data compiled by the National Tobacco Board for the Yiannitsa-Veria district,

Table 35. Capital Requirements of Selected Crops in Greece, Averages 1978-80, Drachmas per Stremma.

Crops:	Variable capital: Seeds, fertilizers Pesticides		Variable capital: Machinery services		Fixed capital (1)		Total capital		Compared to wheat total capital requirements
	Drachmas	%	Drachmas	%	Drachmas	%	Drachmas	%	Index
Burley tobacco	2,106	32.3	2,786	42.6	1,642	25.1	6.534	100.0	5.6
Peaches	1,635	39 8	1,628	39.6	844	20.6	4,107	100.0	3.5
Canning tomatoes	(*)		3,235	78.0	914	22.0	4,149	100.0	3.5
Maize	707	24.2	1,626	55.8	582	20.0	2,915	100.0	2.5
Cotton	554	19.2	1,675	58.2	650	22.6	2,879	100.0	2.5
Sugar beets	(*)		3,166	78.1	890	21.9	4,056	100.0	3.5
Alfalfa	549	21.6	1,604	63.2	387	15.2	2,540	100.0	2.2
Soft wheat	506	43.1	505	43.1	162	13.8	1,173	100.0	1.0

SOURCE: (a) Kitsopanidis, G. J., and Martika, M. 1982
(b) Kitsopanidis, G. J. et al. 1982

(1) consists of depreciation and interest of fixed capital employed.

(*) included in the next column (machinery services).

Table 36. Cash Requirements per Stremma of Burley Tobacco, Yiannitsa-Veria District, 1969-70.

	Total Drachmas	Paid Drachmas	Paid Percentage
Labor	2,520	769	23.0
Rent: Yiannitsa (1,300) Veria (1,100)	1,200	600	17.9
Pesticides-Herbicides	243	243	7.2
Fertilizers	235	235	7.0
Plastics, etc	63	63	1.9
Fuel/lubricants	300	300	8.9
Depreciation-Maintenance	940	?	?
Interests paid	615	615	18.4
Insurance:			
tractor	100	100	3.0
crop	145	145	4.3
curing barn	20	20	.6
Contracted machine work	210	210	6.3
Irrigation fees	50	50	1.5
Total	6 641	3 350	100.0

SOURCE: Argyropoulos, K. (1971:34)

noted that in 1969-1970, 30.5 percent of the labor cost was paid to non-family members, while 50 percent of the cost of land was for rent paid. These production costs amount to 50.4 percent of all expenses involved as is shown in Table 36.

Although compiled from a limited number of cases, more recent data reveal that hired labor for family sized operations (2.3 hectares) increased to 34.4 percent of all labor applied (Table 37), while rent paid jumped to 92.8 percent (Table 38), as compared with only 50 percent in 1969-70 (Table 36). Of course these figures are even greater

Table 37. Labor Inputs of Family Members and Hired Workers in Burley Tobacco Production, District of Yiannitsa, Production Year 1983-84 (1), Hours per Stremma

Operation:	Family workers		Hired workers		Total	
	Hours	%	Hours	%	Hours	%
Seedbeds	7.5	100.0	-	-	7.5	100.0
Soil preparation and fertilization	2.3	100.0	-	-	2.3	100.0
Transplanting	10.1	98.1	0.2	1.9	10.3	100.0
Inter-row cultivations	15.3	64.6	8.4	35.4	23.7	100.0
Spraying	0.9	75.0	0.3	25.0	1.2	100.0
Irrigation	2.9	100.0	-	-	2.9	100.0
Hand harvesting and stringing	48.0	52.2	43.9	47.8	91.9	100.0
Curing @ bulking	13.9	100.0	-	-	13.9	100.0
Total labor	100.9	65.6	52.8	34.4	153.7	100.0

SOURCE: Ministry of Agriculture, Kria Vrissi Extension Office, Unpublished Data on Burley Tobacco Production Cost

(1) data were derived from four tobacco farms averaging 22.9 stremmas of burley tobacco production

for large scale tobacco operations who rely heavily on rented land and hired labor. Data derived from the same survey provide some interesting insights into the amount of capital required and its composition (Table 38). The rent paid was the major expense amounting to 27.1 percent of all capital needs, followed by expenses for the various inputs used (24.3 percent), payments for hired labor (23.9 percent) and fixed capital expenses (23.2 percent).

It should be emphasized that these data (Table 38), are from family operated tobacco farms averaging 2.3

Table 38. Per Stremma Capital Requirements for Burley Tobacco Production, District of Yiannitsa, Production Year 1983-84 (1)

	Drachmas	%
1. Variable Capital Expenses	7,956	24.3
Fertilizers	1,711	5.2
Manure	60	0.2
Pesticides-Herbicides	1,793	5.5
Diesel fuel	1,220	3.7
Engine oil-lubricants	144	0.4
Irrigation fees	180	0.6
Electricity	22	0.1
Other expenses	2,826	8.6
2. Fixed Capital Expenses	7,583	23.2
Depreciation (buildings)	2,322	7.1
" (machinery)	3,917	12.0
Interest paid	1,344	4.1
3. Maintainance	187	0.6
Buildings	33	0.1
Machinery	154	0.5
4. Rent paid	8,852(683)*	27.1
5. Contracted machine work	305	0 9
6. Hired workers	7,820	23.9
Total Capital Needs	32,703	100.0

SOURCE: Ministry of Agriculture, Kria Vrissi Extension Office, Unpublished Data on Burley Tobacco Production Cost

(1) data were derived from four tobacco farms averaging 22.9 stremmas of burley tobacco production

(*) 683 drachmas is the rent for the owned land

hectares of burley tobacco. Capital expenses, especially for rent, hired labor, and depreciation, are expected to be higher for larger tobacco operations, which rely heavily on rented land, hired labor, and large machinery.

These capital needs are generally financed by short-term cash loans provided by the agricultural bank at Kria Vrissi. The local cooperative acts as an intermediary between the bank and the farmers. It prepares lists of farmers, along with the area planted in tobacco and other crops by each farmer, and presents them to the agricultural bank in Kria Vrissi. The bank issues the loan, calculated on a stremma basis for each particular crop, to the cooperative, which in turn distributes it to the farmers.

Besides short-term cash loans, farmers receive credit for the fertilizers purchased through the agricultural bank, the pesticides and herbicides and other inputs purchased from the Union of Cooperatives at Yiannitsa, as well as a certain amount for diesel fuel, depending on the number of tractors they own and operate.

Yet all the credit received is rarely enough to finance the expenses involved. Alekos, the largest tobacco grower in the village, volunteers a revealing comparison:

> "In 1967 the Agricultural Bank was making available to each tobacco grower 30,000 drachmas per hectare in short-term cash loans. That moneywas enough to pay 300 labor-days. Today, the Bank provides 120,000 drachmas per hectare or the money needed to buy 120 labor-days"

The local coperative council invented a scheme to overcome this problem. Spyros, explained the way it works.

> "For tree crops the Agricultural Bank provides to farmers 4,000 drachmas of cash loans per stremma. The village has today about 700 stremmas of tree crops. Therefore we should have received 2.8 million drachmas. Instead we received 12 million drachmas by inflating the stremmas on tree crops. The Bank is well informed of that", he added.

Credit is distributed to farmers according to acreage of crops cultivated and their ability to pay back the loans received. If someone fails to pay back the loan received and does not have any property, the members of the cooperative are equally responsible for covering the debt. Distribution of credit among the farmers is a very difficult task for the council members since many questions arise over the appraisal of each farmer's ability to pay back the credit received.(1) Quarrels are frequent and some, like Christos, have strongly questioned the overborrowing of money.

> "If I was in the cooperative council I wouldn't approve the disposition of short-term cash loans to non-qualified farmers. Whoever does not have trees will not get a loan for trees"

"Why not?" I replied "since by doing so some farmers receive loans they need". "Getting many loans is not good" he answered and immediately explained: "The more loans you get the more you spend and very soon you are unable to pay them back and the rest of the farmers be asked to share in the debt you have created"(2).

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(1) Some farmers are requested to provide one or two quarantorsamongthe big farmersto serve as co-responsibles for the loan.

(2) Christos had a personal experience with that. Some three years ago he started spending short-term cash loans he received at the nearby night clubs. He quit when information about his night activities reached his two sons; caught him one night .

In summary, burley tobacco is a capital intensive crop and the credit supplied to farmers is not enough to finance all the expenses involved. As a result, the small farmers who want to expand tobacco production are unable to do so due to lack of financial resources. It is clear, therefore, that the present credit policy increases the tendency towards greater concentration of production.

5.2 Machinery - Mechanization

After the drainage of the lake at Yiannitsa, the fields were cleared and leveled with heavy machinery to get rid of trees, bushes, and reeds, and to be turned into clean fields ready for cultivation. During the same period (mid 30's), a threshing machine was available each June for harvesting the wheat and other small grains.

Plowing the fields and transporting people and produce to and from the fields was done by oxen and horses. Oxen were gradually replaced by horses, and as one farmer put it, "horses can plow double the acreage a pair of oxen can within one working day".

Tractors were introduced during the late 40's. The first tractor, which was privately owned, was an iron-wheel tractor bought by a farmer, who for three years owned a tractor given to him free of charge by the Service of Mechanical Cultivation.

Various farmers informed me of the high demand in those days for tractors to plow their fields. The tractor

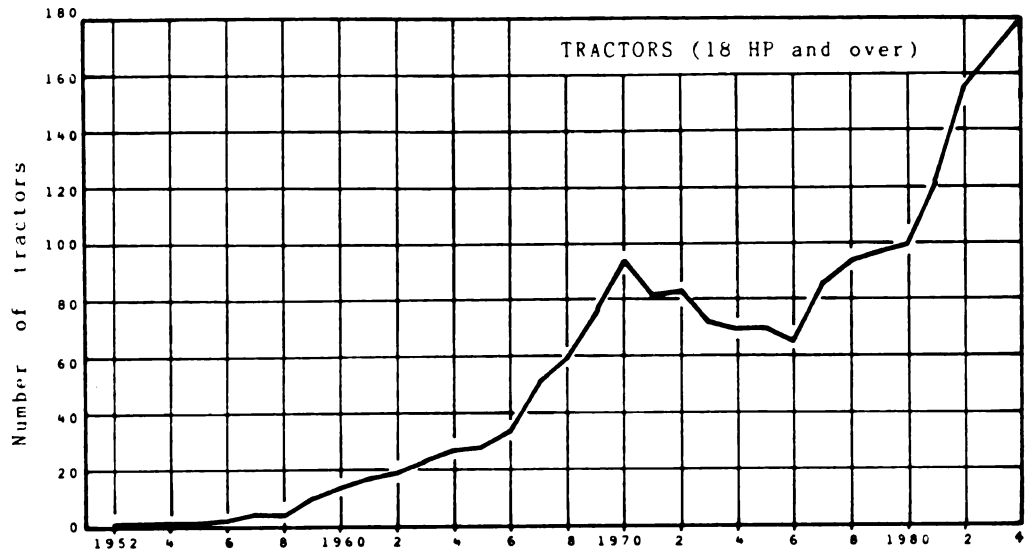

Figure 14. Number of Tractors Owned and Operated by Village Farmers. Period 1952-1984

and the operator remained in the fields. and farmers placed their names on a waiting list. Today, however tractors are used for all kind of purposes. Several farmers, for instance, ride their tractors from home to the coffee house or the cafeteria --a distance of less than one kilometer.

The first wheel tractor was bought in 1952 (Figure 14 and Table C-6); five years later another farmer bought the second one (also 25 HP). At the same time, the use of draft animals began to diminish. The 1961 census enumerated 166 draft animals (horses, mules, and donkeys); only five exist today, all owned by retired farmers (Table 43).

The main impetus towards the tractorization of village agriculture came ten years later, and coincides with the

introduction of burley tobacco (around 1966). Thereafter, the number of tractors in operation continued to increase except for the period 1971 to 1976, when a downward trend was evidenced (Figure 14). This decrease is also associated with the cultivation of tobacco.

Between 1971 and 1974 a significant decrease in the price of tobacco paid to farmers prevented many from taking the risk of getting a loan to buy a tractor. Several farmers were so upset by the low prices, and the reluctance of dealers to buy their tobacco, that they plowed under already established tobacco fields.

Another significant increase in the number of tractors operated was evidenced in 1977, and more recently in 1981-84. This is also linked to a similar expansion of the area planted with tobacco after the abolishment of the allotment program (Figure 6).

A comparison of the 1981 data on tractors owned with similar data compiled using informants (Table 39) reveals that only seven farmers decreased the number of tractors owned in 1984 as compared to 1981. Sixty-nine farmers retained the same number of tractors. On the contrary, 40 farmers bought their first tractor during this period, 24 farmers bought a second tractor, and one farmer even bought two tractors. Two farmers added a third tractor. Thus, 61 new tractors were added to the 118 tractors operated in 1981, bringing the total number of tractors in 1984 to 179 (a 51.7 percent increase over the last three years). As Aristarchos points out: "Today you either own two tractors

Table 39. Number of Tractors Owned in 1984 by Number of Tractors Owned in 1981, All Farms, Agios Loukas.

Tractors owned in 1981	Tractors Owned in 1984				Total	
	0	1	2	3	Number	%
0	-	40	1	-	41	28.7
1	4	59	24	-	87	60.8
2	-	3	10	2	15	10.5
3	-	-	-	-	-	-
Number Total:	4	102	35	2	143	100.0
%	2.8	71.3	24.5	1.4	100.0	

SOURCE: (a) N.S.S.G. 1981 Census of Agriculture, Analysis by the Author

(b) Local Informants for 1984

Table 40. Number of Tractors Owned per Agricultural Operation, Agios Loukas, 1981 and 1984

Number of tractors owned	1981		1984	
	Number	%	Number	%
1	88	85.4	97	70.8
2	15	14.6	38	27.7
3	-	-	2	1.5
Total	103	100.0	137	100.0

SOURCE: (a) N.S.S.G. 1981 Census of Agriculture, Analysis by the Author

(b) Local Informants for 1984

or you own none". Although the available data do not support literally Aristarchos' assertion, nevertheless they do point the tremendous increase in the number of farms with more than one tractor. Between 1981 and 1984, the percentage of farmoperations with two or more tractors doubledfrom 14.6 percent in 1981 to 29.2 percent in 1984 (Table 40).

Farmers provide several reasons to explain the large number of tractors in operation today. Tobacco, which is the main crop, puts a high demand on mechanical power. Fields must be irrigated six or seven times during the growing season. Farm workers and produce must be transported daily to distances which very often exceed 15 kilometers each way. During the growing season. a farmer cannot rely on contracted machine work, so he should have his own machinery. A tobacco grower needs at least one tractor for irrigation and another to carry farm workers to the field for leaf harvest and to return them and the produce to the curing barn.

It is not suprising that most of the tractors in the village are owned by tobacco growers. Of the 76 farms without a tractor, only four (5.3 percent) cultivated tobacco in 1981. On the other hand of the 103 farms whith at least one tractor,only 13 or 12.6 percent did not plant tobacco in 1981 (Table 41 and Figure 15). Also, 15 out of the 16 farm operations with two tractors cultivated more than two hectaresof tobacco.

Another factor that forces tobacco growers to become fully mechanized is the reluctance of tractor owners to be hired by tractor non-owners for various farm tasks (plowing.

Table 41. Relationship Between Possession of a Tractor and Size of Area in Tobacco, Agios Loukas, 1981

Area in Tobacco (hectares)	Without Tractor		With 1 or more Tractors		All Operations	
	Number	%	Number	%	Number	%
0	72	94.7	13 (1)	12.6	85	47 5
0.1 - 1.9	3	4.0	17 (0)	16.5	20	11.2
2.0 - 3.9	1	1.3	57 (7)	55.3	58	32.4
4.0 - 5.9	-	-	9 (2)	8.8	9	5.0
6.0 and over	-	-	7 (5)	6.8	7	3.9
Number	76	100.0	103	100.0	179	100.0
Total: %		42.5		57.5		100.0

SOURCE: N.S.S.G. 1981 Census of Agriculture, Analysis by the Author

(*) numbers in parentheses refer to agricultural operations with two tractors

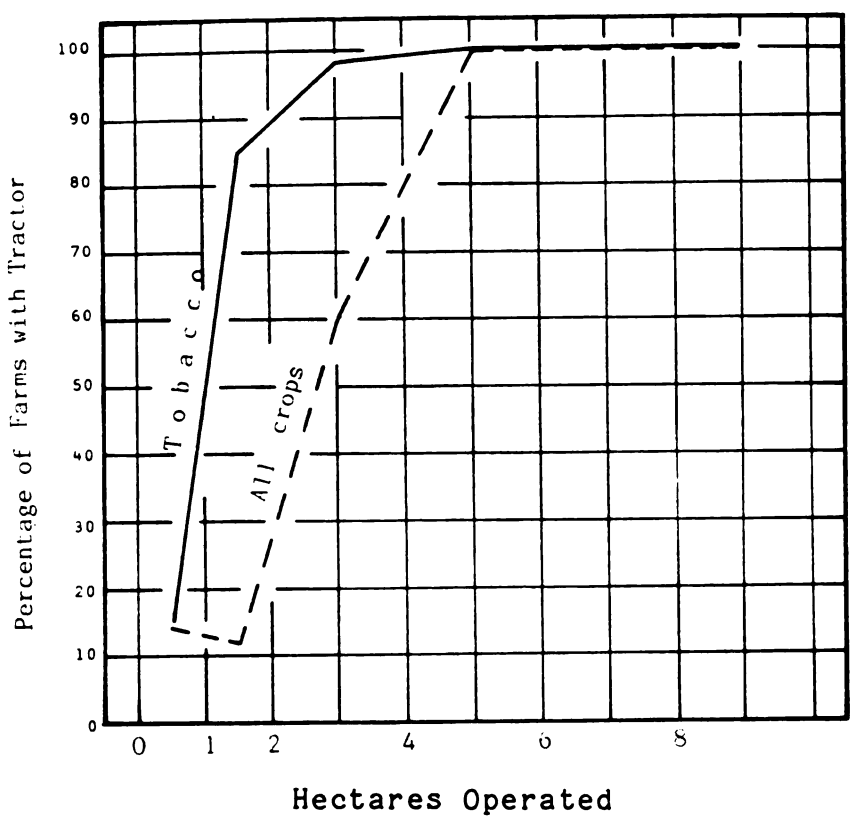

Figure 15. Relationship Between Possesion of Tractor and Cultivated Area of Tobacco and All Crops (including tobacco).

Table 42. Distribution of Tractors Operated in 1970 and 1981 According to their Horse Power, Agios Loukas.

Horse power	1970		1981	
	Number	%	Number	%
25 - 34	1	1.1	1	0.8
35 - 50	48	52.2	42	35.6
51 - 79	42	45.6	63	53.4
80 and over	1	1.1	12	10.2
Total	92	100.0	118	100.0

SOURCE: (a) Community's Archives for 1970

(b) N.S.S.G. 1981 Census of Agriculture, Analysis by the Author

seeding, spraying, etc.), even during the low labor demanding months. Contractual mechanical labor was very common during the initial stages of the tractorization of village agriculture. As Mitsos, a retired farmer, put it:

> "At that time a tractor owner would accept an offer for plowing a 0.3 hectare field 17 kilometers away from the village, while today he would turn down an offer for plowing a 3-hectare field just outside the settlement". And he added:
> "As you understand George. today tractor owners are not in great need of the money they can get through such contractual activities".

Alekos, the largest farmer in the village, provided another reason:

> "Today the farmer wants to finish his job as soon as possible in order to join the others in the coffee house. Instead of a tractor with 45-50 HP, capable of pulling two ploughshares, he buys an 80-HP tractor which is capable of pulling three ploughshares, thus he finishes his job earlier".

Several other farmers admitted that part of the reason for the large number of tractors is due to social competion. As one informant told me:

> "If my neighbor buys an 80 HP tractor, I' ll buy a bigger tractor, 100 HP or even more, if I can afford it".

The horse power of tractors has been increasing over the last ten years. Data compiled for 1970 and 1981 show that tractors with over 80 horse power increased from 1.1 percent in 1970 to 10.2 percent in 1981 (Table 42). The proportion of such over-powered tractors is probably even higher today. As Aristarchos points out:

"Today four-wheel drive tractors are in fashion".

Five tractors rated about 150 horse power have been purchased by farmers. Stathis, a farmer, commended on a huge, newly acquired tractor parked across from one of the coffee houses:

> "Very big. It's a waste of money. It is too big for the fields he (the owner) cultivates. That tractor needs fields".

Another farmer listening to our conversation noted that it cost "three million drachmas (30,000 U.S.D), interest included".

The many tractors and the burden placed upon the financial resources of the family farm are frequently discussed among farmers. Comments like: "We work for the iron-things" or "We 'll die to pay for the iron-things" are frequently made by village people.

It is true that tobacco provides the financial resources needed to buy these tractors, and to some extent

justifies their need. As Alekos points out:

> "Ten tractors would have been enough to cultivate the entire village farming area if we only planted wheat and maize. It is tobacco that requires all that machinery. During the last three to four years when the area of tobacco was expanded, many more new tractors were bought".

One can easily determine what would happen to the economy of the village if, for any reason, the area under tobacco cultivation had to be restricted drastically over the next years.

Mechanization and cultivation of tobacco go hand in hand. A farmer who has decided to plant tobacco for the first time uses all his savings as a down-payment to buy the tractor and most of the other machinery that comes with it. He then starts cultivating tobacco, hoping. over the next three to four years, to be able to pay back the money he borrowed. As Aristarchos points out":

> "Since you have more machinery than you need, you have to find additional fields to work with. Otherwise, those machines cannot be paid off".

This was also the case for coffee production in Puerto Rico. As Eric Wolf (1956:262) notes:

> "The cost of processing machinery exerted pressure for a further increase in the size of landholdings, in the size of the labor force, and in the volume of coffee produced. These needs gave rise to the coffee-growing hacienda".

But expanding the scale of operation or having new farmers brought into tobacco cultivation means more pressure exerted over the demand for rented land. As a result. rents escalate even more.

In summary, expansion of burley tobacco has created a

greater demand for capital necessary to finance production. Credit provided to farmers is insufficient, since it covers only half (52.3 percent) of the expenses involved Small tobacco farmers who whould like to expand are unable to do so. Therefore, the present credit policy favors large farmers and results in an increased concentration of production.

Mechanization goes hand in hand with tobacco expansion. The purchase of machinery puts more pressure on farmers to expand their scale of operation in order to finance the increased expenses brought about by the new machinery. This in turn creates a greater demand for hired labor, additional land and increased competition among farmers in a market already in short supply of both land and labor.

Small farmers are not able to compete with large farmers for hired labor and rented land. Further, increased mechanization has disillusioned farmers in terms of disposable income from tobacco production, since they consider as income the depreciation for buildings and machinery which presently amounts to 19.1 percent of all expenses.

6. Impacts on the System of Farming

The preceding chapters have touched upon certain aspects of the farming system[1] as it evolved in Agios Loukas during the last thirty years. Here, I would like to focus more directly on this and to summarize some of the major changes brought about or accentuated by, the introduction of burley tobacco.

At the outset, one must consider the elements or components which best describe a farming system. Fleisher and Axinn (1981:9-12) provide an extensive list of 30 components clustered in three major areas (Farming system, near environment, and the larger social system). Norman and Gilbert (1981:17-19) suggest a more articulated picture of a farming system by depicting the elements (human and technical), factors (exogenous, endogenous), inputs (land, capital, labor and management), and processes (off-farm, crops, livestock), that in combination form a particular farming system.

Suchan extensive overview of the determinants that constitute a farming system, although useful, is beyond the scope of the present study. However, we need to consider at least some of the more important features of the farming

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(1) A farming system is defined (Axinn, G. 1981:1) "...as a unit consisting of a human group and the resources it manages in its environment, involving direct production of plant and/or animal products, and possibly other products, as well as consumption of those products".

system that appear to have been affected by the introduction of burley.

Degree of specialization in crop production is the more obvious and perhaps most important farming system change. In 1961, the average family farm in Agios Loukas, although it has been gradually losing its subsistence orientation, (crop production was becoming commercialized), retained a fair balance between crop and animal. Twenty years later, the animal component, with the exception of sheep raised by a small number of families, almost disappeared (Table 43 and Figure 16).

Draft animals have been replaced entirely by tractors. The practise of keeping one or two cows or buffaloes, or at least one goat (by the less resourceful households), is presently adhered to only about one-third of the families. Even the raising of chickens for meat and eggs --frequently used in place of cash in trading with the local groceries-- has declined by 37.7 percent, in terms of farm households, and by 20.6 percent in terms of the number of chickens raised during the twenty-year period (1961 to 1981). The number of cows raised has declined further between 1981 and 1984 --by 42.2 percent in terms of farm households having at least one cow and by 30.4 percent in terms of the number of animals raised (Table 44).

In addition to the decline of mixed type farming by farm households, crop production in the village has been restricted to a very small number of crops. During the early years of tobacco production, farmers in the village

Table 43. Operations With Livestock and Total Number of Animals Raised, Agios Loukas, 1961, 1971, 1981

		1961 Census		1971 Census		1981 Census	
		Number	Index	Number	Index	Number	Index
Horses	(1)	na	-	33	100	5	15
	(2)	127	100	35	2	5	4
Mules	(1)	na	-	3	100	-	0
	(2)	27	100	3	11	-	0
Donkeys	(1)	na	-	1	100	-	0
	(2)	12	100	1	8	-	0
Bovine	(1)	115	100	99	86	51	44
	(2)	297	100	234	79	185	62
Buffaloes	(1)	na	-	-	-	-	-
	(2)	72	100	0	0	0	0
Sheep	(1)	24	100	19	79	18	75
	(2)	959	100	799	83	1,198	125
Goats	(1)	32	100	23	72	15	47
	(2)	46	100	48	104	32	70
Hogs, Pigs	(1)	na	-	41	100	19	46
	(2)	80	100	116	145	55	69
Poultry	(1)	225	100	191	85	140	62
	(2)	3,509	100	2,541	72	2,785	79
Bee-hives	(1)	na	-	5	100	3	60
	(2)	8	100	41	513	34	425
Total	(1)	220	100	na	-	150	68

SOURCE: (a) N.S.S.G. 1966. Results of the Agriculture-Livestock Census of March 19, 1961. Athens: National Printing Office

(b) N.S.S.G. 1978. Results of the Agriculture-Livestock Census of March 14, 1971. Vol. II, Pp 690-691, Athens: National Printing Office

(c) N.S.S.G. 1981 Census of Agriculture, Analysis by the Author

(1) number of operations with livestock
(2) number of animals raised
(na) not available

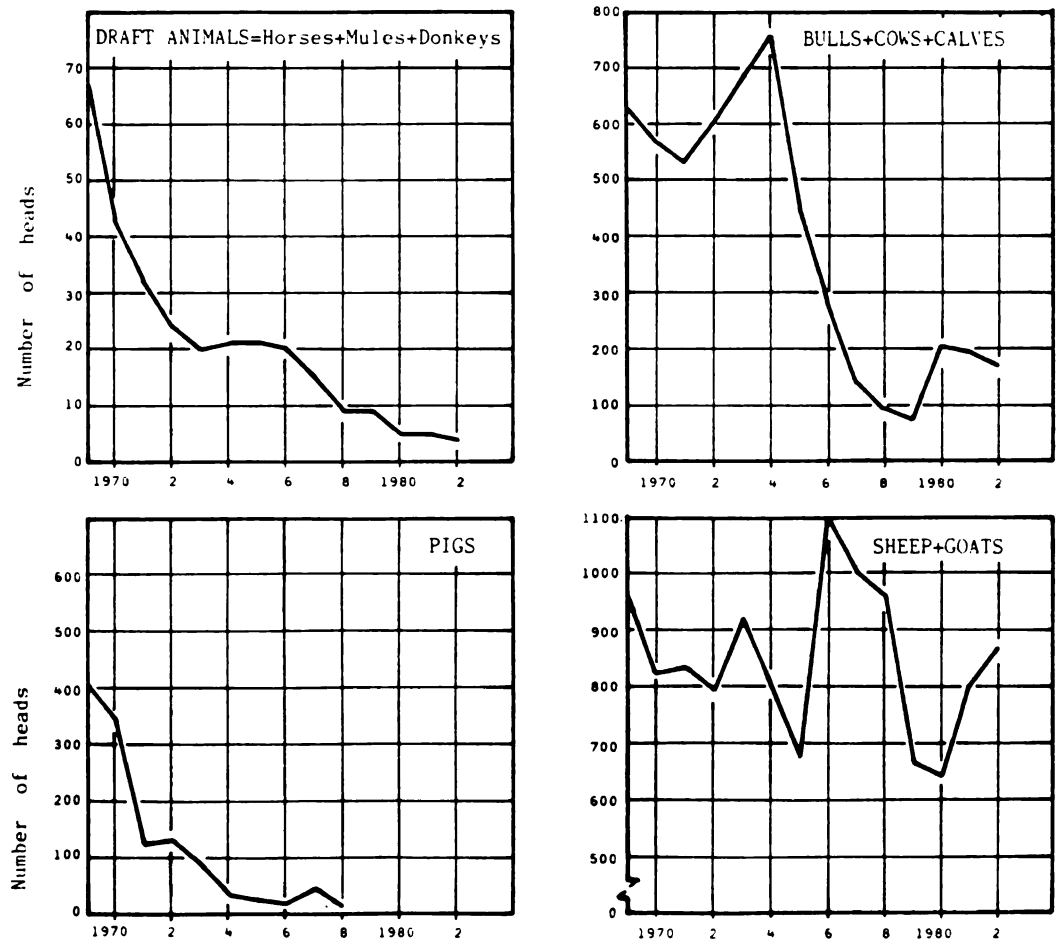

Figure 16. Changes in the Number of Draft and Other Animals Raised by Farmers, 1970-1982.

learned about the consequences of tobacco mono-culture. While yields initially, were high, they soon began dropping, despite the increased application of fertilizers. When they realized that tobacco diseases lived over from year to year in the soil, they started looking for new fields in nearby villages. Quickly, a system evolved whereby crop rotation is accomplished by renting fresh fields periodically.

With the tremendous expansion of burley tobacco during

Table 44. Number of Farms Raising Cows, Agios Loukas, 1981, 1984.

Number of cows Raised	1981 Census		May 1984	
	Number	%	Number	%
1	21	46.7	12	46.2
2	14	31.1	5	19.2
3	4	8.9	3	11.6
4	3	6.7	4	15.4
8	1	2.2	-	-
9	-	-	1	3.8
10	1	2.2	-	-
11	1	2.2	-	-
15	-	-	1	3.8
Farms	45	100.0	26	100.0
Total: Cows	102		71	

SOURCE: (a) N.S.S.G. 1981 Census of Agriculture, Analysis by the Author

(b) Ministry of Agriculture, Extension Service, Kria Vrissi Office

the last three to four years, production has increasingly been pushed to lands that are less fertile, with very low humus content. Chemical fertilizers arenecessary and used to bring yields to normal levels (at least 3 metric tons per hectare). In this search for new tobacco fields, which are invariably of lower fertility, inadequately irrigated, considerable distant from the village. and demanding ever higher rents, small farmers are becoming less competitive vis-à-vis the larger farmers. It appears that, increased concentration in scale of operation, and a bifurcated farm structure may become more exaggerated in the near future.

Another distinguishing feature of the farming system in

Agios Loukas is the high degree of mechanization. During my fieldwork (May 1984), I counted 179 tractors, a 51.7 percent increase over the last three years following abolishment of the allotment program. Further, the size of tractors in terms of horse power, has also increased

While the present incomes derived from tobacco production are able to sustain this "flock" of mechanical horses, for some farmers not realizing that a certain amount of money should be put aside each year to provide the capital needed for replacement (usually after 15 years), mechanization might result in a financial breakdown.

This could become the case for a majority of the farmers if for any reason the area under burley tobacco has to be restricted drastically over the next years. Any other crop could be managed with one-fifth of the present number of tractors. Since the marketing of burley tobacco is controlled by a handful of multinational corporations such a possibility cannot be ruled out. In the first place multinational tobacco corporations brought burley tobacco into Greece and into other "developing" countries throughout the world in order to take advantage of the cheap labor.

Finally, another aspect of change in the farming system of Agios Loukas is the increased difficulty of gaining entry into farming. Inheritance is the only feasible means of access to land. Given the norms and rights of equity to property distribution among heirs, the land share in the estate for most of the aspiring farmers is less than one hectare. A piece of land of that size is considered by local

informants as very small to build on a new business.

In addition to the extremely restricted land resources to start with, there are many other things one needs to start a farming operation today. A new farmer must also be a tobacco grower at the very beginning of his career since tobacco is the only crop that can provide the highest income on a given piece of land. Starting a tobacco operation requires a tractor and an array of machinery, plus a curing barn. Local informants estimate the cost to be about 3 million drachmas (30,000 U.S.D). In addition, half a million drachmas is required for working capital to pay for rents, wages and other needed inputs.

This enormous amount of capital is unlikely to be raised by any aspiring farmer. As a result, many sons continue working together with their fathers, hoping to accumulate the capital needed to adequately finance the two new operations to be formed after the division of the parental farm estate. Delays in division of the parental farm increases tension within the family, and in part, might explain some of the present intergenerational conflicts in the village.

7. Impacts on Farm Social Stratification

Discussing the land tenure situation in Agios Loukas we have emphasized how equity was the main concern of the land distribution program enacted with the completion of the drainage work and the settlement of refugees in the village. In addition, the land distribution law banned any sales on land distributed for as late as 1962 in order to make sure that those who received the land had the intention to farm it by themselves.

Therefore, one might regard Agios Loukas as an homogeneous farming community in terms of ownership of land; the most important variable for stratifying farming communities. But regarding the village as composed of a group of "average farmers" and a few "progressive farmers" would violate the diversity present at the time of our fieldwork.

7.1 Searching for Heterogeneity

During the early days of my field work in Agios Loukas, I was suprised to hear a farmer characterizing another farmer by saying "he is not a farmer, he is a businessman". It wasn't difficult to find out what criteria he was using to differentiate. Alekos, one of the "farm businessmen" referred to made the distinction clear:

> "He who cultivates 2 to 3 hectares of land and depends almost exclusively on his own family labor is farming. Those who operate many hectares of land and rely

> heavily on hired labor are not farming. they are doing business".

Several other farmers suggested that the ratio between family labor and hired labor is the cutting point. And of course when they talk about hectares of cultivated land they mean burley tobacco, which is the most labor intensive crop.

A farm family with two workers can operate 1 to 1.5 hectares of tobacco or 2 to 3 hectares with four family workers; only during leaf priming is there a need for additional help. Labor exchange arrangements --mostly practised among operations planting less than 3 hectares of tobacco-- can take care of those seasonal labor demands without any need for wage payments. On the other hand, a larger 5-hectare tobacco operation requires at least the daily work of 10 persons during leaf priming while 3 workers are required during hoeing. Almost always, additional "outside labor" must be hired.

Data are available on a number of variables pertaining to the family farms enumerated during the 1981 census of agriculture. It is possible therefore to explore how to delineate these farms into several distinct groups or strata.(1)

Amount of land owned was used initially. It did not appear useful for delineating strata resembling the actual situations found in Agios Loukas. Differences in area of land owned were not very great due to the equity in distribution of land during the several public land distribution

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(1) The concept of "group" or "stratum" is used here rather than "social class" because as was the case with Barlett's study in Costa Rica (1982:53) the groups are somewhat fluid and the cutting points used somewhat arbitrary.

schemes, and the short period of time which has elapsed since the last land distribution program (1969). Further, we discovered that several farms that owned one to two hectares were renting three to five times more land. Therefore, total area operated seems to be a more appropriate classification variable than land ownership.

Total land operated was divided into six categories in terms of size. The analysis carried out (Tables 33 and 45) revealed that increase in the scale of operation is accompanied by changes in the allocation of the family labor and types of crops planted. Increases in the scale of operation (at least up to six hectares) are associated with increased allocation of the family's labor in their own farm as opposed to hired farm work and off-farm work). In addition, larger operations rely heavily on tobacco and corn as opposed to smaller operations (less than two to three hectares) where fruit trees and wheat are the predominant crops.

But even those patterns which emerged in commodity structure and labor allocation were not considered adequate and did not resemble actual situations. Reliance on a single variable would have implied that agricultural choices are exclusively shaped by economic considerations. Of course, this is not the case. In agricultural production, farm and household are two units or entities closely intertwined. As Bennett and Kobl (1982:115) point out:

> "The needs of the family and those of the farm move like concentric wheels in a Mayan calendar, intersecting at different, and not always fortunate,

Table 45. Relationship Between Commodity Structure of Farms and Size of Operation, Agios Loukas, 1981.

Crops	Size of Operated Land in Hectares						
	0.1 to 1.0	1.1 to 2.0	2.1 to 4.0	4.1 to 6.0	6.1 to 8.0	8.1 and over	All farms
	1. Operated Land (hectares)						
Wheat	3.9	11.9	18.1	9.0	20.1	18.5	81.5
Maize	6.4	5.1	13.6	24.8	33.0	65.4	148.3
Beans	-	1.1	0.4	0.3	0.4	-	2.2
Fodder crops	-	-	-	0.5	1.8	-	2.3
Sugar beets	-	2.8	3.4	5.1	3.8	43.3	58.4
Cotton	0.7	-	1.0	1.0	0.5	6.0	9.2
Vegetables	1.9	2.2	13.3	7.6	3.1	33.5	61.6
Tobacco	-	6 2	33.1	75.6	56.2	114.5	285.6
Other crops	2.9	4.7	6.4	8.2	4.9	12.1	39.2
Vine yards	0.3	-	0.2	-	-	2.0	2.5
Peaches	9.3	14.6	20.9	10.1	7.5	23.3	85.7
Other trees	1.0	1.1	1.0	1.7	3.9	0.1	8.8
All crops	26.4	49.7	111.4	143.9	135.2	318.7	785.3
	2. Percentages						
Wheat	14.8	23.9	16.2	6.3	14.9	5.8	10.4
Maize	24.2	10.3	12.2	17.2	24.4	20.6	18.9
Beans	-	2.2	0.4	0.2	0.3	-	0.3
Fodder crops	-	-	-	0.3	1.3	-	0.3
Sugar beets	-	5.6	3.1	3.5	2.8	13.6	7 4
Cotton	2.6	-	0.9	0.7	0.4	1 9	1.2
Vegetables	7.2	4.4	11.9	5.3	2.3	10.5	7 8
Tobacco	-	12.5	29.7	52.6	41.6	35.9	36.4
Other crops	11.0	9.5	5.7	5.7	3.6	3.8	5.0
Vine yards	1.1	-	0.2	-	-	0.6	0.3
Peaches	35.2	29.4	18.2	7.0	5.5	7.3	10.9
Other trees	3.8	2.2	1.5	1.2	2.9	0.0	1.1
All crops	100.0	100.0	100.0	100.0	100.0	100.0	100.0

SOURCE: N.S.S.G. 1981 Census of Agriculture, Analysis by the Author.

> points. For example, children may reach an "expensive" stage of growth at the very time when the enterprise is in need of capital..."

Therefore, I shifted to a more complex classification scheme involving more than one variable. The problem was, to start with total land operated that has already provided some evidence of stratification and try to improve it further by incorporating additional variables. The median size of land operated in 1981 was 2.9 hectares. The dichotomy which resulted differed substantially in terms of rented land, owned land mean horse-power used, allocation of labor, and crop structure. While the group of farms operating more than 2.9 hectares of land appear homogeneous, farms operating less than 2.9 hectares are a heterogeneous group.

It seems that family farms wanting to expand their scale of operation have the opportunity to rent additional land. Those who do not may have been forced not to do so by life circumstances. For many of the 91 family farms operating up to 2.9 hectares (small) I observed that stage in the life-cycle was the prime factor in explaining their scale of operation.

For instance, in six of the seven cases of female farm operators, the male farmer was deceased and the surviving spouse, who took over the farm, restricted the operation to land owned either because there was no male heir available or he was too young to take over the farm. The seventh case was a divorced woman.

Further, eight farmers were well over retirement age with no son remaining on the farm. Since there was no

viable option for the continuation of the farm into the next generation they also restricted the scale of operation. Whatever portion of land was not rented out was cultivated with crops requiring minimum labor inputs and management (e.g., grains).

The remaining 76 small farms can be sorted into two groups based on whether the farm operator is or is not engaged in off-farm activity. Using local informants, we collected information to distinguish "part-time farmers" with off-farm work[1] from the "full-time small farmers" with no off-farm work.

Thus, we observe five relevant groups. Averages obtained for a number of farm structural variables (Tables 21, 22, and 46) provide some very useful insights into the agricultural choices made by these types of farmers.

"Large farms" or "farm businesses", as they are called in Agios Loukas, are generally operated by farmers in their late forties. On the average, they have 1.2 tractors of high horse powered type (51 HP and over), own the most land, and even rent more land than they own. They grow mainly tobacco (41.4 percent) and corn (20.0 percent), and allocate their labor mainly to thefamily farm.

"Full-time small farms" are operated by farmers a year or so younger than those operating the large farms. Less than a third of them maintain a 51-79 HP tractor. Generally

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(1) Due to limited opportunities for off-farm activities presently available in Agios Loukas, and the small number of farm operators working on other farms, we included the latter in the group of part-time farmers.

Table 46. Allocation of Labor of the Average Male and Female Family Worker on Various Types of Farms, Agios Loukas, 1981.

Labor allocation	Large farms	Full-time small farms	Part-time farms	Women Operated	Retired Farms	All Farms
	1. Average Number of Labor Days					
Family farm	180.6	104.3	67.7	96 9	91.9	140.3
Male	196.6	118.8	79.4	113.3	91.9	153.9
Female	158.5	81.4	48.2	92.0	92.0	121.1
Other farm	34.4	104.3	128.8	51.0	-	96.0
Male	33.8	106.9	110.6	-	-	96.9
Female	35.0	101.0	152.1	51.0	-	95.0
Off-farm work	116.1	101.6	193.4	180.0	80.0*	157.3
Male	118.5	121.7	189.5	120.0*	80.0*	159.5
Female	106.0	67.1	206.4	210.0**	-	151.2
	2. Indices					
Family farm	129	74	48	69	66	100
Male	128	77	52	74	60	100
Female	131	67	40	76	76	100
Other farm	36	109	134	53	-	100
Male	35	110	114	-	-	100
Female	37	106	160	54	-	100
Off-farm work	74	65	123	114	51	100
Male	74	76	119	75	50	100
Female	70	44	137	139	-	100

SOURCE: N.S.S.G. 1981 Census of Agriculture, Analysis by the Author.

(*) mean derived from one case

(**) mean derived from two cases

they own much less land than do large farmers, do not rent any land, tend 15 percent more livestock than large farmers do, grow mainly fruit trees (29.4 percent), wheat (17 6 percent), and generally a small amount of various other crops (corn, vegetables, tobacco). Members of their family work not only on the family farm, but in neighbor farms and in off-farm vocations.

"Part-time farms" are operated by a younger age group These farmers generally do not have tractors (only one out of 42 owns a 35-50 HP tractor). They own less land, do not rent any and do not tend any livestock (only 0.3 livestock units). About 30.8 percent of their land is in fruit trees. They also grew some wheat and corn (23.1 percent). But most of their labor (as expected) is given to wage work for others or in non-farm jobs.

"Women operated" are a small category (4.9 percent of all farms) and are much like part-time farmers in terms of machinery used and area owned, rented and operated, as well as in livestock tended. Fruit trees are on a third (36.3 percent) of the area cultivated. Tobacco too is important (27.3 percent). With regard to family labor allocation, work on the family farm takes most of their time, followed by work on other farms and off-farm work.

"Retired farmers", of course are older, average 73 years of age. Although half of them own a tractor, it is often standing idle in a corner of the house-yard. The main crop is wheat (46.2 percent of the land) followed by fruit trees (23.1 percent). All the land cultivated is owned by

them and working on their own farm is the only activity carried out by family members of the retired farmers.

7.2 Testing Heterogeneity: The Etic Approach

After estimating the averages of a number of structural variables which were used to derive the five strata of farm households in Agios Loukas we wanted to explore this classification scheme through the technique of discriminant analysis (Klecka, W., 1980, 1981:434-67; Morrison, D. 1969:156-63 and 1974:2-442 - 2-457) Two important questions seemed to deserve an answer. How well did we classify the farm households? Which variables were most effective in discriminating among the different farm households?

The following 15 variables were entered into this computation and in the order listed below with one variable (part time 1) removed during the last step:

1. MECHANIZATION = Sum of the horse power of all tractors operated on the farm

2. PART TIME 1 = A quatromized variable measuring the percentage of the operator's total labor allocated to the family farm:
   1= alllabor was allocated to the family farm
   2= labor allocated to the family farm was between 50 and < 100 percent of the total labor inputs
   3= labor allocated to the family farm was between 25 and < 50 percent of the total labor inputs
   4= labor allocated to the family farm wasless than 25 percent of the operator's total labor inputs

3. AGE = Age of the operator in years

4. LAND RENTED = The percentage of rented land out of the total area farmed

5. LAND OWNED = The size of owned land in stremmas

6. SUCCESSOR = A dummy variable referring to the presence of an on the farm successor (SUCCESSOR=1) or none (SUCCESSOR=0)

7. MALES = The number of male workers

8. ROOT CROPS= The area in stremmas under sugar beets and potato cultivation

9. GENDER = The gender of the on farm successor

10. OTHER 1 = The number of days the farm operator worked on other farms

11. WHEAT = The number of stremmas devoted to wheat production

12. TREES = The number of stremmas occupied by tree crops

13. FARMTYPE =A six-value variable derived from the allocation of the labor supplied by all members of the farm household to one or more of the three possible categories (family farm, other farm, off-farm work):
    1= all labor allocated exclusively to the family farm
    2= labor allocated between family farm and other farms
    3= labor allocated among the family farm. other farms and off-farm work
    4= labor allocated between the family farm and off farm work
    5= labor allocated between other farms and off-farm work
    6= labor allocated only to other farms

14. NONFARM 1 = The number of days the farm operator worked at off-farm work

15. VEGETABLES = The number of stremmas under vegetable cultivation (mainly tomato production)

The overall number of cases correctly classified was very high, 83.24 percent (Table 47). Classification was one hundred percent correct for "retired farmers" followed by "large farmers" (96.6 percent) and "women operators" (85.7 percent). The lowest match was observed in the group of "full-time small farms" (64.7 percent) followed by "part

Table 47. Classification Results of the Family Farms in Agios Loukas Obtained Through the Use of Discriminant Analysis, 1981.

Actual group membership	Number of cases	Predicted group membership: Large farms	Full-time small farms	Part-time farms	Women operated	Retired farms
Large farms	88	85 96 6%	3 3.4%	0 .0%	0 .0%	0 .0%
Full-time small farms	34	1 2.9%	22 64.7%	9 26.5%	1 2.9%	1 2.9%
Part-time farms	42	1 2.4%	11 26.2%	28 66.7%	2 4.8%	0 .0%
Women operated	7	0 .0%	1 14.3%	0 .0%	6 85.7%	0 .0%
Retired farms	8	0 .0%	0 .0%	0 .0%	0 .0%	8 100.0%

Percent of "grouped" cases correctly classified: 83.24%

time farmers" (66.7 percent).

Examining the mis-matched cases one by one, it was found that the three cases of "large farmers" classified by the discriminant analysis as "full-time small farms" were very close to the cutting point of 2.9 hectares used. Two farms classified as full-time small farms were misclassified as such due to an error during our classification process. They should have been classified as "part-time farms", since their operators had off-farm employment. The one case of "women operators" classified by the discriminant analysis as belonging to "full-time small farms" was a farm run by a female operator who had a tractor, two sons aged 27 and 16

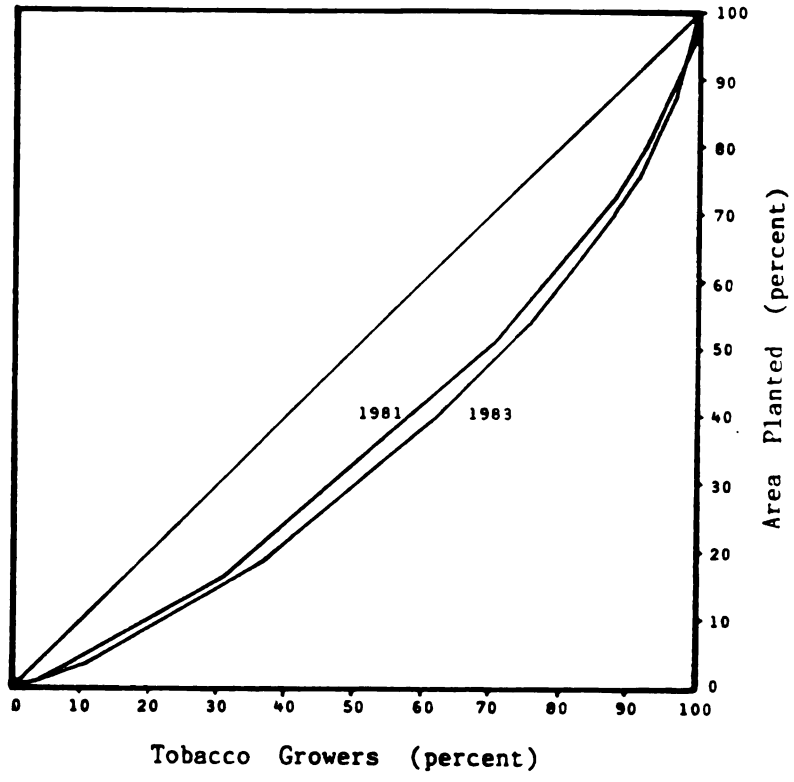
working on the farm and 1.9 hectares of tobacco. Our exclusive reliance on the gender of the operator proved to be wrong in this case. The characteristics of this farm more closely resembles the characteristics of full-time small farms with the potential of becoming a large farm if expansion of the scale of operation is sought.

It is interesting to note that the area under tobacco cultivation was not incorporated among the 14 most important variables in terms of discriminating power. This does not mean that the area of tobacco is not an important variable in stratifing the farms of Agios Loukas. The exclusion resulted from the high correlation (r=.948) with the variable that measures mechanization, which was the first variable to enter into the computations.

7.3 Testing Heterogeneity: The Emic Approach

Having done this, it would be interesting to examine whether farmers in Agios Loukas actually recognize the five strata derived. Considering this, it should be mentioned, however, that two additional strata should be added to the five strata already derived. They are the group of "hired migrant workers" and the group of "village hired workers". Both groups were left out of the 1981 census since they did not qualify as farm households (cultivation of at least one stremma of land and/or breeding of a certain number of livestock).

Field research revealed that "large farms" and "full-



Measures of dispersion:

	1981
Gini	0.27
Kurtosis*	15.13
Skewness*	2.86

	1983
Gini	0.32
Kurtosis*	24.93
Skewness*	3.73

Figure 17. Distribution of Planted Area in Tobacco in 1981 and 1983, Agios Loukas

time small farms" are distinguisable groups in Agios Loukas and actually some form of conflict exists between them. "Full-time small farmers" accuse large farmers of setting the wages for hired labor and through their large scale tobacco production have knocked them out of the market for rented land. Full-time small farmers object to the abolishment of the allotment program that resulted in the tremendous expansion of tobacco production and increased competition for scarce resources (labor and land).

(*) refers to area planted in tobacco

Table 48. Distribution of Tobacco Growers According to Hectares Planted in Tobacco in 1981 and Intended to be Planted in 1983, Agios Loukas.

Hectares in Tobacco	1981		1983	
	Number	%	Number	%
Up to 1.0	3	3.2	8	5.7
1.1 - 2.0	26	27.6	23	16.2
2.1 - 3.0	37	39.4	42	29.6
3.1 - 4.0	17	18.1	32	22.6
4.1 - 6.0	4	4.2	23	16.2
6.1 -10.0	6	6.4	12	8.5
10.1-15.0	1	1.1	1	0.6
25.0	0	0.0	1	0.6
Total	94	100.0	142	100.0
Small farms (up to 3.0)	66	70.2	73	51.4
Large farms (3.1 and over)	28	29.8	69	48.6
Median	2.50 hectares		2.95 hectares	
Mean	3.04 "		3.85 "	

SOURCE: (a) N.S.S.G. 1981 Census of Agriculture, Analysis by the Author
(b) National Tobacco Board of Greece, Office of Yiannitsa, Unpublished data.

> "Today everyone plants tobacco. Some plant more than 10 hectares of tobacco. How can you compete with large farmers for land leases?"

a full-time small farmer complain.

Data on the number of tobacco growers and the area planted in 1981 and intended to be planted in 1983 reveals a 51.1 percent increase in the number of tobacco growers, just two years after the abolishment of the allotment program (Table 48). Moreover, the same data reveal that a fairly large number of tobacco growers were able to increase their

scale of operation. While 28 tobacco growers planted more than 3 hectares in 1981 --those called, "large growers" or "businessmen"-- by 1983 there were 69 of them a 146.4 percent increase. The number of full-time small farmers increased by only 10.6 percent. As a result, concentration in tobacco production was not further enhanced. The Gini coefficients computed were almost identical; 0.27 for 1981 and 0.32 for 1983 (Figure 17).

One must then ask why tobacco production has increased so dramatically after the abolishment of the allotment program? Data provided through production cost studies (Kitsopanidis, G. J., and M. Martika, 1982:10) and presented in Table 49 suggests some of the factors involved.

From 1965-68 to 1978-80 the gross return on burley tobacco increased at a higher rate than production costs. In 1965-68 production costs represented 90.1 percent of the gross return; in 1978-80 it represented only 59.2 percent As a result, profits as a percentage of gross return have quadrupled (from 9.9 percent in 1965-68 to 40.8 percent in 1978-80).

Moreover, the return on land, as a percentage of rent, increased from 165.6 percent to 533.7 percent, the return on labor as a percentage of wages from 121.8 percent to 239.2 percent, and the return on capital invested almost tripled (from 8.6 to 22.8 percent). Therefore, despite large increases in production costs (e.g., a threefold increase in rent and a sixfold increase in days' wages) returns on land, labor, and capital have been in favor of large scale pro-

Table 49. Returns, Production Costs, Profits and Incomes relative to Burley Tobacco Production, Averages for Greece, 1965-68 and 1978-80.

	1965-68	1978-80	Change 1965-68 to 1978-80
Gross return (drs/str)	6,600	31.816	NA
Production costs (% gross return)	90.1	59.2	-30.9
a. according to production costs			
Land rent (% production costs)	16.8	15.9	-0.9
Labor wages (" " ")	50.6	49.4	-1.2
Capital expenses (" ")	32.6	34.7	+2.1
b. according to farm operations (% production costs)			
Seedbeds	4.6	2.7	-1.9
Soil cultivations and fertilizing	4.3	7.6	+3.3
Transplanting	5.3	7.8	+2.5
Inter-row cultivations	6.3	7.1	+0.8
Spraying	4.4	2.6	-1.8
Irrigation	9.7	5.3	-4.4
Hand harvesting and stringing	25.6	30.9	+5.3
Curing and bulking	11.3	11.5	+0.2
Profits (% gross return)	9.9	40.8	+30.9
Return to land (% rent)	165.6	533.7	+368.1
Return to labor (% wages)	121.8	239.2	+117.4
Return to capital (%)	8.6	22.8	+14.2
Farm income (% gross return)	75.0	83.3	+8.3
Farm income (drachmas per stremma in 1982 prices)	23.765	45,848	+22,083

SOURCE: Kitsopanidis, G.J., and Martika. M. 1982. Pp 10

(NA) Not Applicable

duction. Farms expanding their scale of tobacco production had the opportunity to utilize a greater proportion of their family labor. use their machinery more efficiently and reap substantial profits because of the low costs of the additional factors employed (land, labor, and capital). Further, these farms already had the extra capital needed to finance a larger scale of operation.

In addition to capital requirements in the form of machinery, curing facilities and cash money, local farmers emphasize managerial skills and a risk taking attitude as equally important for operating a large scale tobacco operation. Nickolas, a small to average tobacco grower who recently switched to burley tobacco, had that in mind when he reacted to my question as to whether he planned to expand his operation.

> "If you want to succeed when you are in the "farming business", you must be systematic and tough with the farm workers. If you go into the red for one year, then you will need many years to recover and make additional progress".

Turning now to "part-time farmers", fieldwork reveals that local people do not view them as a distinct stratum different from other full-time small farmers. Lomis, who owns one of the three cafeterias in the village and at the same time has a 1.2 hectare peach-farm. is a typical part-time farmer. He does not own a tractor and hires others for pruneing, fertilizing and insecticide application. The only time he works on the farm with his family is during harvest. When I asked him if he considers himself a farmer he was very quick to answer "no". I reminded him of the small

peach-farm he operates. His reaction:

> "I do not know if my present business with the cafeteria I opened seven months ago will continue to be successful in the future. Before starting this business I was a farmer planting even tobacco".

Lomis, provides an interesting explanation of the motivations of part-time farmers in retaining farming activity (uncertainty about the viability of the off-farm work). This lack of a clear distinction might stem from the fact that off-farm opportunities opened up recently --during the seventies-- and even today there are no major employment opportunities in the industrial sector in Agios Loukas and the vicinity nearby.

"women operators" (seven cases) result from life events --death of their husbands (six cases), divorce (one case). They see themselves as guardians of the enterprise or "holding things together" (Kobl and Bennett, 1982:158) until their sons are grown and able to take over the farm. Farming is considered a male occupation and this negative position is held even in families without sons. Daughters are socialized from childhood to consider marriage, having children, and house chores as their chief raison d' etre. The only situation where control of the enterprise by a woman is socially approved and even encouraged and rewarded is after the death of her husband.

"Retired farmers", form another small category in Agios Loukas. Retirement from farming is not accomplished as soon as a farmer reaches 65 years of age. For most farmwork is considered an indication of good health. But when

farmers reach 65 years of age, and no son or son-in-law has remained in the village to take over the farm, the scale of operation is gradually reduced to owned land or to whatever is left after distribution to their children. Farmers always keep a small plot of land (usually one hectare) for an additional source of income. That piece of land is passed on to the child who will look after them in their old age.

"Village farm workers" consist of two distinct categories with different work tasks, compensation and prestige: "farm workers" (georgoergates) and "farm employees" (ipalili or epistates). There were more farm workers before abolishment of the allotment program, since allotments were given only to farmers who owned the machinery and the curing barn needed for tobacco production. After abolishment of the allotment program in 1981 and the favorable prices received for tobacco, many farm workers started planting tobacco on a small scale. Today there are no more than 20 persons, mostly women, for whom paid labor is the only labor activity. "Farm employees" on the other hand are exclusively males. They are hired on a seasonal or yearly basis by large tobacco growers who do not have a second male family worker to assist them with the management of the operation.

About half of the farm employees are former full-time small farmers who are attracted by the security of the job and the extra source of income they get through the cultivation of half an hectare of tobacco crop using the machinery and the facilities of their employer. These are rather steady workers since most do not intend to break the oral

agreement, renewed every year, and start farming again. They are in their late forties to mid fifties.

The other "farm employees" consists of young aspiring farmers who through this working arrangement expect to get the experience and the capital they need to start their own farming operation. As a result they are a rather fluid category. Actually, several young "farm employees" have started their own operation during the last four years following abolishment of the allotment program.

Farm employees are indispensable for some large scale operations. Through their help, some farmers are able to increase their scale of operation while others have stopped doing any manual labor and restricted themselves to managerial tasks. The managers take pride in their own new role by saying, when asked why they are not in the fields. "I am the "afentiko" (boss). Others work for me".

Finally, it should be pointed out that "migrant farm workers" form a socially distinct group. They are not regarded as. nor do they regard themselves as part of the village community. Some locals believe that migrants are inferior people e.g., lazy people who prefer leisure activities instead of hard work, slow learners who are incapable of doing unsupervised work, persons unkind to their families who mistreat and beat their wives etc. But there are some locals sympathetic to the migrants and, indeed, consider their tenure position (landless) as the reason for their misery.

The high fertility rates among migrants and the

resultant pressure on family resources limit their posibilities of ever getting a piece of land large enough to provide them with an adequate income. In addition, their children must leave school two months early each year in order to accompany their parents on their migratory cycle; these children will never gain the education necessary for upward social mobility.

For most migrants, the work opportunities they get in Agios Loukas and nearby areas are, their only source of income. Thus, when some of them heard about a mechanical tobacco harvester being tested in a nearby town, they expressed agony over the possibilities of being replaced by the new machinery: "What are we going to do, boss?. Where are we going to find work?".

7.4 Summary

Integration of survey and fieldwork data provide some very important insights about the agricultural structure of this village. Seven different strata of farmers and farm laborers were delineated.

"Large farmers" own, rent and operate the largest farms, own more than one tractors, grow mainly tobacco and allocate their labor almost exclusively to the family farm.

"Full-time small farmers" own less land and even rent less land. Only a third of them own a tractor, they grow mainly fruit trees, wheat and nearly a little of everything else, and they allocate their family labor almost equally

among the family farm, other farms and off-farm work.

"Part-time farmers" own 26.7 percent less land than "full-time small farmers", do not rent any additional land or tend any livestock, and have their land planted mostly in fruit trees, wheat and corn. They allocate their family labor mainly to off-farm work; some work on other farms; of course, all work on their own farm to some extent.

"Women operators" are on their own as a result of life events and until a son can take over management of the farm. They are much like to "part-time farmers"; but they grow a substantial amount of tobacco (27.3 percent) of their total production. Also, they are not inclined to work off their own family farm.

"Retired farmers" limit production entirely to land owned and although half of them own a tractor, it invariably remains idle. Fruit trees and wheat production occupy seven-tenths of the area farmed. Their limited work activity, due to age, is entirely given to the family farm. These operations will be transfered out of the family after the death of the present operator, since there is no successor present to take over. Their land, which will be inheritted by the immediate family members will be either sold or rented to other farmers in the village.

"Village farm workers", consist of two distinct categories of persons with different work tasks, compensation and prestige: **"Farm workers"** (georgoergates) and **"farm employees"** (ipalili or epistates). "Farm workers" are mainly women (spouses of small farmers, and young girls working

to earn their own pocket money). With the expansion of tobacco production this group has been further reduced since many more farmers started growing tobacco. "Farm employees", on the other hand, are all males (former small farmers or aspiring farmers). They are hired on a seasonal or annual basis and receive a monthly salary. Their tasks vary from supervision of hired migrant workers to the operation of the machinery. The opportunity to cultivate half an hectare field of tobacco using the machinery and the curing barn of the large farmer for whom they work is a part of the benefits they receive. For some large farmers the help provided by an employee is a necessity if they wish to expand their scale of operation.

Finally, "migrant farm workers" are a socially distinct group. They do not have any land of their own in their home villages and therefore have no other option than to migrate, following a path that will take them to southern Greece and finally to the Agios Loukas and the nearby area.

8. Impacts on Local Cooperation

8.1 Development of Local Organizations: An Overview

Every village in rural Greece that has at least 500 residents qualifies to be officially recognized as a "Kinotita" (community), and thus to form a local government and hold elections every four years.

Agios Loukas was officially recognized as a Kinotita in 1956. Prior to 1956, it was one of the five villages that together constituting the Kinotita of Gimna. The elected officials consist of a president, vice president and three council members. In addition, as a permanent paid employee of the Community, the secretary is responsible for keeping the records of the Council's meetings, the vital and agricultural statistics of the village, the land, population and voting registry books. He/she is also responsible for preparing the budget and making the bills for water. electricity, and village taxes. Finally, he/she acts as a representative for the Rural Social Welfare Agency which provides medical care and retirement benefits to retired farmers and their spouses.

The authority granted by the central government to the more than six thousand communities throughout Greece is very limited. Decisions reached by the village council and involving an expenditure of village funds must be approved by the "nomarch" --the district governor who is appointed by the central government.

Since the begining of the present century local autonomy has declined in Greece. Even the Community Development Program that started after the civil war, in an effort to mobilize and unite local people into defining and solving their own needs and problems, died out within a decade. The civil administration holds a strong paternalistic approach to local problems. Politicians and administrative officials at the top of the hierarchy have successfully managed to perpetuate the myth that they know better than local people what their needs are and how they can be met. Sanders (1962:249) quotes the comments made to him by a gymnasium (high school) director that provide some very interesting insights into the impacts of restricted local autonomy on community involvement:

> "About thirty or forty years ago the community was independent. It was something solid; it elected the best people to office. Why? They elected their own teacher, their own priest, and the field guards. Three main points of their life --education, religion, and security--were all in their own hands. The central government wanted to take into its own control all of these functions in order to put its own appointees who would influence the people. The peasants lost their ability to manage their own affairs, and became hostile to the government and to the teacher. The teacher is no longer responsible to the farmer but to the government. Nowadays, because of this and because of the anti-government attitude brought in by the refugees from Turkey, the peasant has separated himself from his government and asks everything from it".

In addition, rural people value self-reliance instead of cooperation and thus leave almost no room for local initiative and participation in village affairs. The "Area Handbook for Greece" (Herrick, A. 1970:156) provides a very good picture of rural people's values as they relate to

local affairs:

> "The people take a great pride in their community or village of origin... In spite of their pride in one's village, attempts to establish village or regional cooperative groups, particularly in rural settings, have encountered resistance. The stress placed on self-reliance, a suspicion of other's motives, and individual independence predisposes villagers to be wary of farming agricultural or village improvement societies. Cooperation, beyond short-term, reciprocal mutual aid patterns which exist between relatives and immediate neighbors, has not been a part of traditional life. Distrust of outside control and a tendency to shun any group royalties beyond the family have hindered cooperative action".

McNall (1974:85) in his ethnography of two Greek villages in Attica after giving the flavor of local politics pointed out that:

> "...(local) people viewed the local government with mistrust and believed that the village officials were trying to maximize gains for themselves and their immediate families. Intrigue and gossip play an inevitable role in this system, and no real form of parliamentary democracy has developed".

McNall (1974:106) emphasizes the importance of values. internalized during childhood, in shaping the behavior patterns of adult males that relate to participation in local and national affairs:

> "...during early socialization the young male comes to believe not only that he is destined for great things, but that he advances at the expense of the out-group. He does not enter into cooperative endeavors; he almost automatically questions the motives of those who suggest cooperation (emphasis added).

8.2 The Agios Loukas Cooperative Association

This general overview of the farmers' attitude toward cooperation is equally applicable in the Agios Loukas context.[1] The local cooperative was founded in 1951. Speaking

of progress made since then. Yiannis--the present accountant of the cooperative-- emphasized the material accomplished made.

> "The treasury of the cooperative had 30,000 drachmas until 1976. Today it has 2 million drachmas, 500 square meters of warehouse space and has already paid its 1.4 million drachmas share in the tobacco cooperative established in Kria Vrissi".

This is definetely true. The commission received from the agricultural bank for the loans distributed to farmers --last year the cooperative distributed 130 million drachmas in loans and received a commission of about 900,000 drachmas-- was the reason for the significant financial progress that has been made.

Other than that. the cooperative movement is still in a lethargic stage. Mutual distrust coupled with the belief that everyone puts his own and his family's benefit before others (image of limited good)(2) are the main reasons

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(1) Cooperatives were first established by law in Greece in 1915.

(2) As Foster (1965:296-97) pointed out:
"By 'Image of Limited Good' I mean that broad areas of peasant behavior are patterned in such a fashion as to suggest that peasants view their social, economic, and natural universes --their total environment-- as one in which all of the desired things in life such as land, wealth. health friendship and love. manliness and honor, respect and status, power and influence. security and safety, exist in finite quantity and are always in short supply. as far as the peasant is concerned. Not only do these and all other "good things" exist in finite and limited quantities, but in addition there is no way directly within peasant power to increase the available quantities". A major implication of this is that "...an individual or a family can improve a position only at the expense of others", and therefore "...an apparent relative improvement in someone's position with respect to any 'Good' is viewed as a threat to the entire community".

behind the lack of progress or even the regression made in terms of cooperativeness. Meetings of the local cooperative are not attended by more than 25 percent of the members -- "mostly small farmers", as Yiannis pointed out. But during elections. 80 to 90 percent of the members vote.

The election of the council is not conducted in terms of a platform --there never has been a debate in terms of a platform or any long-term program to be accomplished by the canditates-- but rather along party lines. When I asked a member of the present council affiliated with the party in power, whether they had a certain program to accomplish during their four-years of service to the council, he replied negatively and added:

> "we were elected on the basis of our political affiliation. The majority of the council (three out of five members) are affiliated with the opposition party and they will fight against any policy measure to be implemented by the present government for the development of the cooperative movement".

Moreover, during the last elections, farmers in favor of the present government tried to form a second cooperative when the majority of the seats were held by the opposition party. The strong disapproval of that movement by some young local leaders prevented the formation of a second cooperative.

Strong partisan affiliation hinders the development of cooperativeness ("sinergasia") among farmers. When I met Nickos, a school-teacher candidate, the first thing he mentioned was the lack of cooperation among farmers in Agios Loukas.

> "The partisanship propagated by some people is very detrimental to the development of local cooperation.

> We have reached a point where villagers are divided into rightists, leftists and liberals. Moreover, a person judges another person by the party color and very frequently we come to cases of cooperation, very easy to solve by common sense. but not so easy when one opposes the other's ideas because he is affiliated with another party".

8.3 Burley Tobacco and the Prospects for Cooperative Development

Turning now to the question of whether tobacco has helped with the development of cooperativeness among farmers or not, I would say definitely not. Of course tobacco has contributed a lot to raising the assets of the local cooperative, but at the same time it has reinforced individuality and self-reliance.

As mentioned earlier, many farmers have expressed the need to be self-reliant through emphasis on machinery. Contracted mechanical labor has declined since the introduction of tobacco because, as many farmers will point out, those who own the machinery are not in need of the extra money that can be made through such activities.

While small tobacco growers (1 to 3 hectares) cannot afford to buy the machinery needed and, further, it does not pay to maintain them. cooperative ownership and use of machinery is a very sound investment in terms of costs and returns for small scale operations. Groups of three to five small tobacco growers can pool their resources in order to buy and use the machinery needed. As Nickos points out:

> "A fully mechanized tobacco grower needs to spend 4 million drachmas on machinery. He will need 15 years

> to pay back that machinery. By that time he must buy new machinery and put himself in debt again... Five farmers each growing 1.5 hectares of tobacco need to pay 50 thousand drachmas for hoeing each 1.5 hectare field. By putting together slightly more than that amount, they could buy a 300,000 mechanical hoe capable of weeding 7 to 8 hectares of tobacco".

Farmers believe that communal ownership of machinery will raise many problems over the scheduling of work accountability for damages, etc. This, they think, will result in the break up of the group within a very short period of time. Some have emphasized the problems encountered even between brothers jointly owning machinery to make the point that cooperation outside kinship lines would be rendered impossible.

That line of argument was used extensively in a series of episodes I witnessed during my fieldwork in Agios Loukas. On April 1984 the long overdue revised law on Agricultural Cooperatives was scheduled to pass through the parliament. One of the provisions of the law --enacting the formation of groups of farmers within each cooperative and aimed at cooperation in the stage of production (group or cooperative farming)-- received strong criticism from the opposition party. Soon the atmosphere became charged in the coffee houses of Agios Loukas where strong arguments took place between farmers speaking for and against the law.

The government strongly believed that Greek farmers could benefit by lower production costs if the scale of production units could be increased by pulling together the land resources of a number of farmers. Its political opponents accused the government of trying to bring and

actually put into practise, the concept of collectivism. Of course that was an exaggeration and an example of bad politics, since the decision to join the farming groups rested with the farmers who would retain full control over all resources.

Farmers in Agios Loukas affiliated with the opposition partywere argueing that under the new law individual creativity would be lost; that their tractors and other machinery would be confiscated and given to others to operate; that they would be turned into employees receiving orders from others and thus lose control over the disposition of their labor; that they will share equally the profits no matter how many resources they have contributed in the collective farm.

Marketing of tobacco through the local cooperative has never been accomplished, although many of them recognize that they could get better prices if all would agree to sell the product through the cooperative.

During the tobacco marketing period (November through March), tobacco growers are in a secret war against one another. Farmers never disclose the price they have been offered by tobacco dealers, even to their family members and rumors about prices offered to farmers are spread in the coffee houses. Dealers approach farmers individually, make offers and ask them not to disclose the price, since they have given them a "higher" price than the price they are going to offer to other farmers having a "lower" quality tobacco. Some farmers have also been awakened during the

night --a practise prohibited by the tobacco marketing law-- and offered a better price than that offered during the day, but still lower than the price offered the same night in the coffee houses.

This "divide and conquer" practise of tobacco dealers has been very effective in rendering any effort to market the product through the local cooperative ineffective. Marketing of burley tobacco is controlled by a few dealers affiliated with the multinational tobacco industries

In 1983, for the first time, the government provided ample credit to cooperative unions to buy the 1982 crop which was still in the hands of growers by June 1983. A year later most of the tobacco bought was still in the warehouses, and, as several farmers and agricultural officials told me, it will be sold again to tobacco dealers since efforts for direct export had been unsuccessful. Even the Eastern European countries, who buy 10 percent of the Greek burley tobacco (Table 10), prefered to do business with the tobacco dealers instead of the cooperative unions, to the great disappointment of tobacco growers. As a result, almost 100 percent of the 1983 crop was marketed by tobacco dealers.

Dimitris, a forty-year old average tobacco grower, who is committed to the development of the cooperative movement, emphasized that he and other tobacco growers would prefer to sell their produce to tobacco dealers, instead of the cooperative, if both offered the same price. As he pointed out:

> "Selling it to the cooperative you might end up losing money if the marketing of the product by the cooperative ends with a net loss that has to be distributed among the participating farmers on a per kilogram-price basis".

Others like Vassilis, the current president of the cooperative, blame the lack of direct benefits accruing to the farmers, who are members of the cooperative. He mentioned the case of the Cooperative Union at Yiannitsa, founded in 1928 by several village cooperatives, and today having 72 village cooperatives, among them the Agios Loukas cooperative. The Union has been very successful. Presently it operates three super-market groceries, has a cotton gin, 14 warehouses with a total capacity of 14,200 metric tons, an insecticide-herbicide store at Yiannitsa, corn-drying facilities capable of drying 60 metric tons of corn per hour, a cotton oil-seed factory, and sorting and cooling facilities for deciduous fruits. Pointing to all those, Vassilis called the Union the "new Aga", the "new landlord" (o neos tsiflikas) and he justified the terms used by adding:

> "The farmer in Agios Loukas does not receive any direct benefits from the business carried out by the Union. Why should a farmer buy his groceries from the Union's super market at Kria Vrissi when he pays the same price as other non-members do?. The Union's profits must be returned to participating cooperatives and through them to the farmers. We have incorporated such term to the charter of the newly established tobacco cooperative in Kria Vrissi. It reads as follows: Profits will be returned to farmers in accordance with the quantity of products surrendered to the cooperative for marketing".

While many scholars and practitioners of the cooperative movement in Greece would not agree with

Vassilis' remarks --what would the situation have been without the intervention of the Union in the marketing of agriculturalinputsand outputs inthe region?-- Vassilis' ideas provide interesting insights into the farmers' view of the role of the cooperatives. His comments also suggest the fact that cooperative development in Greece was exclusively concentrated at the secondary level (Cooperative Unions). and at the expense of grass roots cooperatives (village level). As a result farmers' awareness of the potentialities of cooperatives has not advanced further; this hinders any progress towards the development of the cooperative movement in Greece.(1)

In summary, the cooperative movement in Agios Loukas has not progressed during the last twenty years of increased tobacco production. Individuality and self-reliance have been further reinforced, and currently with increasing inequality of wealth among farmers, the prospects for cooperation in other spheres (production, marketing) beyond simple distribution of credit, seems very limited. The traditional suspicion of others' motives, the strong feeling of helplessness, the mistrust of local leaders, and the belief that everyone should put his own personal interests

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(1) Weintraub and Shapira (1975:56) noted that while at the beginning a centralized induced and managed form of cooperative organization was a necessity in overcoming the individualistic orientation prevailing in the rural areas, presently, "...the persistence of the centralist tendency retards rather than promotes growth, and constitutes an obstacle to the development of autonomous rural leadership. responsibility, and managerial skills, having an adverse effect on the attitude of the farmers".

before group interests, all point the way to a cognitive orientation that is better understood through the "image of limited good". With this orientation, partisan politics have further retarded any possibilities for significant progress, in terms of farmers' getting more control over their productive activities.

IV. SUMMARY - DISCUSSION

This study was undertaken to explore the impacts of the introduction of burley tobacco on the structure of agriculture in a Greek village and the new economic and social relationships that have emerged. The analysis was carried out by focusing on the main factors of production (land, capital, labor, and management), the system of farming, the patterns of social stratification within the agricultural community, and the norms of local cooperation within the village.

Farmers in Agios Loukas witnessed an enormous change in both the ecology and the population of their village. In earlier times fertile land was abundant But the influx of about 400 immigrants, mostly during the 1930s, created an enormous pressure upon the land resources of the village. Concomitantly, as the village became integrated into the larger Greek society, rising expectations added further pressure on the land resources.

Initially, new crops (mainly cotton) and high yielding varieties that replaced and/or improved the traditional staple foods (corn, beans, and later wheat), more fertilizers, insecticides, and the introduction of new farming techniques resulted in significant increases in farm income. Soon, however, those increases were threatened by continued population growth and rising expectations. By 1961, population density reached an all-time high in Agios Loukas, 162

inhabitants per square kilometer, as compared with 81.1 inhabitants per sq. km. for the district of Yiannitsa and 63.6 inhabitants per sq km for the nation as a whole. During the 1960s the opportunities that opened up in other areas of the country and abroad eased some of the population pressure.

Those who remained in the village had no other option than to shift to crops capable of providing the highest income per unit of land. The completion of a new irrigation and drainage project followed by the consolidation of fragmented farmland, during the second half of the 1960s, gave farmers a better control over their environment and enlarged their crop choices. Three new crops (canning tomatoes, peaches, and burley tobacco) were introduced to the village. Any of these three crops was capable of providing a higher income per unit of land. Among them, burley tobacco was and still is the highest income yielding crop followed by peaches and canning tomatoes.

As tobacco was making its way into the production system of the village it brought many changes in the structure of agriculture and altered the economic and social patterns of behavior within the farming community. These impacts can be traced to specific characteristics of the new crop.

Burley tobacco: 1) has to be rotated every other year with other crops or moved to a new field; 2) places a high demand on capital, in the form of cash or short-term credit (for purchase of inputs and payment of rents and wages) or

in the form of machinery and buildings (for soil preparation, weed control, mist irrigation and spraying, and curing barn); 3) offers very high returns to both land and labor; and 4) requires substantial technical skills on the part of the farmer and evenmore, managerial skills when the scale of operation is beyond the labor capacity of the farm family.

The abolishment of the allotment program in 1981 resulted in a dramatic increase in the area under tobacco production (by 1983 it was 170.7 percent over the 1980 area). Since the average farm was not large enough to accomodate the need for field rotation, tobacco growers started renting land in nearby villages.

With extra labor available through migrant workers and with the high returns of tobacco to land and labor some farmers expanded their scale of operation to such a level that their own family labor consists of only a small part of the labor required to run the farm operation.

The large scale tobacco operations are clearly distinguished by local people from the small scale operations where family labor continues to provide the labor requirements of the farm. These large operations are called "farm businesses" and their operators "businessmen" as opposed to "farming" and "farmers".(1)

My analysis revealed that operations run by "farm businessmen" and by "farmers" differ substantially in a number of ways. "Farm businessmen" own two times more land

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(1) refers to "full-time small farmers"

and rent even more land (21.5 times) than do "farmers". As a result, "farm businessmen" operate a total of almost five times more land than do "farmers". In addition, "farm businesses" own and operate a larger number of high-powered tractors and their family members work more on their family farm than on other farms or in off-farm jobs. In contrast, families managing small operations allocate their labor time equally to their own farm, other farms and off-farm activities.

Tobacco occupies the largest share (41.4 percent) of the land operated by "farm businessmen" followed by corn (20.0 percent). In contrast, "farmers" grow mainly fruit trees (29.4 percent), wheat (17.6 percent), and generally a small amount of a variety of crops (corn, vegetables, tobacco).

Another important aspect of "farm businessmen" is that for some, management and labor activities are no longer carried out by the same person. Through the year-round employment of a male worker from the village, called an "ipalilos", some "farm businessmen" need not be directly involved in laboring in the fields; rather, they are able to supervise indirectly the entire production process. The labor is carried out mostly by the hired "ipalilos" and a number of migrant workers hired for specific tasks and for as long as required to accomplish those tasks. This new form of agriculture in the village may be the beginning of what has been termed "industrial agriculture" or "commercial

agriculture" in the advanced industrial societies.[1]

In contrast, full-time small farms rely almost exclusively on family labor. Seasonal labor deficits are mostly taken care by labor exchange arrangements that take the form of "sinergasia" or "parea" and "danika". This supportive network of helping obligations and expectations is presently undermined by large tobacco growers. The emerging agrarian economy which is based on a monetary calculus of time and energy may, according to Poole (1981), undermine traditional community relations.

My analysis also revealed that the momentum behind those structural changes has been strong and actually intesified from 1965-68 to 1978-80. The marginal value to opportunity cost ratios has increased for all factors of production: for land from 3.10 to 4.11; for labor from 0.53 to 1.36; and for capital from 0.53 to 0.73 (Kitsopanidis, G.J., and Martika, M. 1982:35). These numbers clearly point out that productivity of land and labor has increased faster than rents and wages paid, respectively, from 1965-68 to 1978-80.

As far as capital is concerned. its productivity has increased during the same period but the marginal value of capital employed in burley tobacco production is still lower

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(1) Burgel (1978:213) also notes that the penetration of the market in the Greek countryside is detrimental to the survival of the small family farms and might have far reaching social impacts if it favors a small number of farmers who have easy access to credit, managerial abilities, and large land ownership.

than its cost. This finding dramatically points out the great dilemma faced by small farmers. That is, (paraphrasing Shakespeare) "to mechanize or not to mechanize". Not to mechanize but to plan or growing tobacco means that the small farmer would have to rely on contract crews and their machinery. This option is not feassible given the present system of farming in Agios Loukas. With increased tobacco monoculture those who have the machinery are also busy tending their own tobacco fields. Besides, if there are some time breaks they have no interest in the little extra money they can get through these contractual activities. On the other hand, deciding to mechanize without increasing the scale of operation leads gradually to a financial breakdown. Labor savings are minimum and in addition, the cost of operating the machinery exceeds their returns.

Therefore, those who decide to buy machinery (tractor and various implements) have no other option than to expand their scale of operation. Expansion results in lowering the cost of machinery since fixed costs will now be distributed over a larger productive base. In addition, by renting more land and hiring more labor they benefit from the greater productivity of both land and labor as compared to their costs.

At the same time, mechanization and expansion of scale of operation enables the average farm family to realize substantial savings on hired labor by employing a greater percentage of its labor than a family operation with the same degree of mechanization but of smaller scale of

operation. Therefore, when tobacco quotas were no longer in effect tobacco growers had every reason to expand their scale of operation if they had the machinery, curing facilities and the cash capital needed.

While present incomes derived from tobacco production can sustain this "herd" of mechanical horses, increased mechanization has disillusioned farmers in terms of disposable income from tobacco production. Most of them and especially small farmers, consider as disposable income the depreciation for buildings and machinery which presently amount to 19.1 percent of all expenses. If a certain amount of money is not put aside each year and for a period of 15 years to provide the capital needed for replacement costs, mechanization might become a financial breakdown. This could become so for the majority of farmers if for any reason the area under burley tobacco has to be restricted drastically over the next years. Any other crop could be managed with one-fifthofthe present number of tractors.

The village is no longer an autonomous unit. It is entirely incorporated[1] into the international market. It is a part within the international division of labor asexemplified by Wallerstein (1980). Itsfuture economic prosperity

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(1) Andrew Pearse used the concept of "incorporation" in his study of the Latin American Peasantry (1975:251-64). In a latter article (1978:198) he provided the following definition of the concept:
"...the persistent outward expansion of the great industrial powers and their compulsion to incorporate peripheral human groups and resources in their communication and transport systems, their international market structure (including the manpower market) and their institutions and cultural forms".

depends heavily on decisions reached in Athens, Brussels and in other European and international decision-making centers. The present Common Agricultural Policy of the EEC and the continued devaluation of the Greek currency has resulted in favorable prices paid to tobacco growers. But this policy -- the only common policy of the EEC-- is pre-sently under revision, mainly as a result of pressures exerted by its Northern industrialized members who are reluctant to undertake any longer most of the cost of the support program for the agricultural products of the Southern EEC member-states.

As we have seen, the marketing of tobacco is controlled by a handful of multinational corporations. Multinational tobacco corporations brought burley tobacco into Greece and into other "developing" countries throughout the world, in order to take advantage of the cheap labor. If the cost of burley production increases faster in Greece than in other burley producing countries, Greek burley tobacco will without doubt again lose its competitive edge in the world market, as was the case in 1971. That would spell disaster for Agios Loukas farmers.

Another important aspect of the dependence of the village in the European markets is the fact that 90 percent of the burley tobacco produced is exported, literally, as a raw product to be processed in the plants of the multinational tobacco corporations in Europe and elsewhere. A recent report by the U.S. Department of Agriculture (1984:27), estimates that "only about 8 percent of the price of a pack of cigarettes reflects the leaf in the cigarette". Therefore

the added value is minimal and the village along with the region and the national economy is deprived of additional jobs that would have been created if manufacture was feasible. In addition, tobacco is not a perishable product so tobacco companies can create enough stocks in order to manipulate the market to their advantage.

Expansion of tobacco production has also placed a high demand on short-term capital necessary to finance seasonal costs. Burley tobacco is not only a labor intensive but also a capital intensive crop. Credit available to farmers is generally insufficient, since it covers only half of the expenses involved. Small tobacco growers who are willing to expand their operation are increasingly restricted by the lack of capital. Therefore, the present credit policy tends to favor large growers and in the long run presses toward an increased concentration of production.

Furthermore, entry into farming has become extremely difficult for aspiring young people. With no communal land left for distribution to the landless, inheritance is the only means of access to farmland. But because of the normative and legal restrictions of the concept of property rights and equity among heirs, the land share in the parental estate for most aspiring farmers is less than an hectare. In addition to extremely restricted land resources to start with, capital requirements are an unsurmountable obstacle for most young persons seeking entry into farming. A capital of 3.5 million drachmas (35,000 U.S.D) is required for machinery, curing barn, etc.

Big capital like that is unlikely to be raised by any aspiring farmer. As a result, many brothers continue working together with their father, hoping to accumulate the capital needed to adequately finance the two new farms to be formed after the division of the parental family farm. The delays in the division of the parental farm increases tension within the family, and in part, might explain the present intergenerational conflicts in the village.

With the tremendous expansion of burley tobacco during the last three to four years, production has increasingly been pushed to less fertile soils, with a much lower humus content and inadequate irrigation and drainage. Chemical fertilizers are increasingly being used to bring yields to normal levels (at least 3 metric tons per hectare). In this race to acquire land, ever of lower fertility, with inadequate irrigation, far from the village, and at ever higher rents (and wages for labor), small farmers are becoming less competitive vis-à-vis the larger farmers. There is little doubt that an increased concentration in scale of operation and a bifurcated structure of agriculture will become more distinguishable in the near future.

Clearly too, the cooperative movement in Agios Loukas has not progressed during the last twenty years of increased tobacco production. Individuality and self-reliance have been further enhanced, and currently, with increased inequality of wealth among farmers, the prospects for cooperation in other spheres (production, marketing) beyond simple distribution of credit, seems very limited.

The traditional suspicion of others' motives, the strong feeling of helplessness, the mistrust of local leaders, and the belief that everyone should put his own personal interests before group interests, all point the way to a cognitive orientation that is still better understood through the "image of limited good".(1)

Tobacco dealers are successfully taking advantage of this orientation and through their prefered marketing method, with sales at the barn door rather than by auction, renders ineffective any effort by the local cooperative association to play a bigger part in marketing tobacco. Partisan politics too have further retarded any possibilities for significant progress, in terms of farmers' getting more control over their productive activities.

The high incomes generated from tobacco production have changed the economic and social patterns of behavior of the local community. Consumption patterns for the majority of the households are similar to those adhered in urban areas. Most of the houses are new with modern furniture and appliances --not to mention the color TV sets. About half of lage in Greece. During the last ten years consumption has

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(1) Of course although the behavior patterns of the present farmers in Agios Loukas can be explained to a large extent through Foster's "image of the limited good" or Banfield's "amoral familism" we still do not line up entirely with those who believe that all the people of individual communities everywhere are all alike --homogeneous in cultural and phychological characteristics. We believe, and our research has provided evidence, that significant heterogeneity exists. There is a "pool of behavioral possibilities" (Pelto and Pelto, 1975:14) in the village from which new behaviors can be selected.

the homes have telephones; a very high percentage for a vil-

been pushed from necessities to luxurious items and is reaching an epidemic scale that McNall (1976:41) termed "commodity fetishism"[1]. A prime indicator of the increased desire for consumer goods is the 30 passenger cars --among them five to six BMW's that only the wealthier Greeks can afford-- owned by farmers in Agios Loukas.

Also, increased afluence, brought by the high incomes generatedfrom tobacco production, resulted in spending substantial sums of money on the part of adult males in the numerous night clubs that sprouted up like mushrooms along the main rural roadways. This practice reached an epidemic scale five years ago but recently it has been curbed to some extent due to pressure exerted by women and girls. This is an indication of the decreased role of adult males within the power structure of the family.

One of the major changes taking place in the village is associated with the reformation of the familial institution. Thedecline in the position of the head of the household, mostlyin relation to his children than to his wife, isthe most dramatic change. The elderly too have lost most of coffee houses talking to each other and criticizing the behavior of the youth which is considered as immoral and

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(1) McNall (1976) sees the "commodity fetishism" as a manifestation of the desire of Greeks for participation in the modern world. As he pointed out: "the Greek villager exchanges his slim savings for transistor radios, German umbrellas, and Italian shoes". Unfortunately, in the case of Agios Loukas, savings spend for consumer goods are far more greater than those spend by villagers in Varnavas and Milessi and therefore have far more reaching impications for the farmers themselves and the local and national economy.

their power. One can see them sitting in the park or the incomprehensible to them. Their opinion does not carry anymore the same weight.

With jobs available outside the family unit, the hold between generations weakened. The village youth and especially the boys have successfully gained control over the disposition of their labor. The cafeteria as the challenging open club to the control exerted by the coffee house is a prime indicator of the changes brought about in intergenerational relations. Girls too, are not restricted to home anymore and have the opportunity to pay visits to a cafeteria without parental permision.

The role of women within the family has also changed. They are increasingly involved in the decision making process and they managed to free themselves from traditional tasks e.g., tending the household livestock (cows, chicken, etc). Now you can see a married couple with their kids visiting a cafeteria or a restaurant on weekends, something you could not witness even ten years ago.

Finally, having gone through the material I presented here, I also have the same mixed feelings that accompanied two other scholars who did ethnographic research in Greece; a strange sense of familiarity and a suprised awareness of its strangeness (Friedl, 1963:5), and/or the striking contrast between the old and new in Greece (McNall, 1976:28).

APPENDIX A

Table A-1. Changes in the de Facto and de Jure Population, Agios Loukas, 1961 and 1971.

	1961		1971	
	Number	%	Number	%
(1)				
De Facto Population	1,133	100.0	1,086	100.0
Registered residents	1,076	95.0	1,011	93.1
Unregistered residents	57	5.0	75	6.9
(2)				
De Jure Population	1,186	100.0	1,194	100.0
Presentatenumeration	1,076	90.7	1,011	84.7
Enumerated elsewhere in Greece	106	8.9	146	12.2
Temporarily living abroad	4	0.4	37	3.1

SOURCE: (a) N.S.S.G. 1964. **Results of the 1961 Census of Population and Dwellings. Vol. I, Pp 234.** Athens, Greece: National Printing Office

(b) -------. 1980. **Results of the 1971 Census of Population and Dwellings. Vol. I, Pp. 187.** Athens, Greece: National Printing Office

(1) "de facto" population: refers to all persons present in the village at the time of the census, no matters whether permanently residing in the village or being there temporarily.

(2) "de jure" population: refers to all persons legally included in the Registry Book of the village, irrespective of where they might happen to reside at the day of the enumeration.

Table A-2. Fertility of Women Born Between 1891 and 1960, Agios Loukas.

Number of children born	1881-1890		1891-1900		1901-1910		1911-1920	
	Number	%	Number	%	Number	%	Number	%
0	-	-	1	2.6	4	8.3	2	4.1
1	6	28.6	-	-	1	2.1	7	14.3
2	-	-	6	15.4	1	2.1	4	8.2
3	2	9.5	8	20.5	3	6.2	2	4.1
4	6	28.6	8	20.5	10	20.8	8	16.3
5	4	19.0	4	10.3	9	18.7	12	24.5
6	1	4.8	4	10.3	6	12.5	8	16.3
7	1	4.8	6	15.4	3	6.2	3	6.1
8	-	-	2	5.1	1	2.1	-	-
9	1	4.8	-	-	-	-	2	4.1
10	-	-	-	-	-	-	1	2.0
Total (1)	21	100.0	39	100.0	48	100.0	49	100.0

Number of children born	1921-1930		1931-1940		1941-1950*		1951-1960*	
	Number	%	Number	%	Number	%	Number	%
1	4	4.9	4	3.0	5	5.5	17	17.0
2	8	9.9	13	9.6	12	13.2	29	29.0
3	15	18.5	50	37.0	48	52.7	36	36.0
4	18	22.2	40	29.6	18	19.8	13	13.0
5	20	24.7	13	9.6	6	6.6	5	5.0
6	8	9.9	10	7.4	2	2.2	-	-
7	4	4.9	4	3.0	-	-	-	-
8	2	2.5	1	0.7	-	-	-	-
9	1	1.2	-	-	-	-	-	-
10	-	-	-	-	-	-	-	-
11	1	1.2	-	-	-	-	-	-
Total (1)	81	100.0	135	100.0	91	100.0	100	100.0

SOURCE: Agios Loukas Population Registry Book. Analysis by the Author.

(*) women on these cohorts have not completed their child bearing age.

(1) percentages might not add to 100 percent due to rounding errors.

Bold faced numbers point the median number of children born to each cohort of women.

Table A-3. Distribution of Buildings According to the Period of Their Construction, Agios Loukas, 1970.

Construction Period	Number	%
Before 1919	1	0.2
1919 - 1945	40	6.8
1946 - 1965	247	41.7
1966 - 1970	288	48.6
Under construction	16	2.7
Total	592	100.0

SOURCE: N.S.S.G. 1978. **Results of the 1970 Census of Buildings.** Pp. 324. Athens, Greece: National Printing Office.

Table A-4. Distribution of Buildings According to Their Number of Storeys, Agios Loukas, 1970.

Storey:	Number	%
Ground floor only	547	92.4
Ground floor and one storey	45	7.6
Total	592	100.0

SOURCE: See Table A-3 (Pp. 67)

Table A-5. Number of Buildings Classified According to Their Use, Agios Loukas, 1970.

Use	Number	%
Exclusively for housing	268	45.3
Mainly for housing	23	3.9
Exclusively or mainly for other purposes	301	50.8
Total	592	100.0

SOURCE: See Table A-3 (Pp. 153, 238)

Table A-6. Distribution of Buildings Used Exclusively and Mainly for Housing According to Their Number of Dwelling Units, Agios Loukas, 1970.

Number of Dwellings	Exclusively for housing		Mainly for housing	
	Number	%	Number	%
0 or unoccupied	6	2.2	-	-
1	253	94.4	23	100.0
2	9	3.4	-	-
Total	268	100.0	23	100.0

SOURCE: See Table A-3 (Pp. 153)

Table A-7. Distribution of Buildings Used Exclusively or Mainly for Other Purposes According to Their Use, Agios Loukas, 1970.

Use:	Number	%
Offices	14	4.6
Factories - Warehouses	180	59.8
Schools	2	0.7
Hotels	-	-
Churches	3	1.0
Hospitals - Clinics	-	-
Other	102	33.9
Total	301	100.0

SOURCE: See Table A-3 (Pp. 238)

APPENDIX B

Table B-1. Land Use in Greece, Selected Years.

Year	Arable land(1)	Permanent grassland(2)	Forest land	Other land(3)	Total
		1. 1,000 hectares			
1965	3,902.1	4,824.0	2,608.0	1,859.9	13,194.0
1970	3,909.7	5,245.0	2,610.0	1,429.3	13,194.0
1975	3,866.7	5,250.0	2,615.0	1,462.3	13,194.0
1977	3,856.8	5,255.0	2,618.0	1,464.2	13,194.0
		2. Percentages			
1965	29.6	36.5	19.8	14.1	100.0
1970	29.6	39.8	19.8	10.8	100.0
1975	29.3	39.8	19.8	11.1	100.0
1977	29.2	39.8	19.9	11.1	100.0

SOURCE: (a) F.A.O. Production Yearbook. Rome. Various Years.

(b) N.S.S.G. Agricultural Statistics of Greece, 1965 1970, 1975, 1977. Athens, Greece: National Printing Office.

(1) excludes double-cropped and inter-cropped land but includes all fallow land.

(2) almost exclusively rough grazing land.

(3) residual. Includes vacant land, bush land not in pasture, unproductive land, land not in agriculture, and waterways.

Table B-2. Fertilizer Use in Greece, Selected Years, 1933-37 1950-1977, (nutrient weight).

Year	Nitrogen		Phosphate		Potassium		Total	
	Number	Index	Number	Index	Number	Index	Number	Index
	1,000 metric tons							
1933-37	na	na	na	na	na	na	26.0	10
1950	22.0	16	19.0	19	na	na	41.0	16
1955	41.6	31	30.6	30	na	na	72.2	29
1960	73.1	55	58.6	58	9.0	60	140.7	56
1965	133.9	100	101.8	100	15.0	100	250.7	100
1970	200.6	150	118.5	116	17.5	117	336.7	134
1977*	294.0	220	173.9	171	35.9	240	503.8	201
	Kilograms per hectare of arable land							
1950	6.3	18	5.5	21	0	0	11.8	18
1960	19.8	58	15.9	61	2.4	63	38.2	60
1965	34.3	100	26.1	100	3.8	100	64.2	100
1970	51.3	150	30.3	116	4.5	118	86.1	134
1977*	76.2	222	45.1	173	9.3	245	130.6	203

SOURCE: (a) U.S. Department of Agriculture 1975. **Structural Changes in West European Agriculture, 1950-70.** Foreign Agricultural Economic Report No 114, Washington, D. C., Pp. 37.

(b) --------. 1982. **Selected Agricultural Statistics on Greece,1965-77.** Statistical Bulletin No 675 Washington, D.C. Pp. 125.

(*) provisional data

na = not available

Table B-3. Self-sufficiency in Selected Agricultural Commodities, Averages 1933-37, 1965-67, and 1975-77.

Commodity:	1933-37	1965-67	1975-77
Wheat	55	114	109
Rice (milled)	4	114	106
Barley	96	104	92
Corn	85	58	36
Oats	98	100	100
Rye	100	100	100
Potatoes	94	97	104
Tomatoes	na	118	197
Oranges	98	148	184
Lemons	(*)	171	211
Peaches	-	165	145
Table grapes	115	131	159
Dried grapes	na	353	326
Grapes for wine	na	117	134
Meat (total)	83	73	84
beef/veal	61	73	84
sheep/goat	85	71	64
pork	99	97	96
poultry	100	76	100
Milk	99	85	87
Olive oil	100	122	122
Vegetable oils	75	67	81
Sugar	-	68	120
Cotton (lint)	67	234	171
Tobacco (farm weight)	332	732	560

SOURCE: (a) U.S. Department of Agriculture. 1982. Selected Agricultural Statistics on Greece, 1965-77 Statistical Bulletin No 675. Washington,

(b) Whipple, Clayton E. 1944. "The Agriculture of Greece", Foreign Agriculture. Vol. 8(4): 89, 91, 93.

na = not available

(*) included in oranges

Table B-4. Compound Annual Growth Rates (1) of Gross Domestic Product at Factor Cost and Constant 1970 Prices by Major Sectors, Greece, Selected Periods, 1969-79.

Period	Agriculture	Industry	Services	Total (Gros Domestic Product)
1947/49-1952/54	6.0	na	na	na
1952/54-1957/59	5.4	na	na	na
1960-65	7.8	8.9	7.1	7.7
1965-70	1.8	9.6	7.0	6.7
1970-75	3.9	5.6	5.9	5.5
1975-79*	-1.1	6.6	5.4	4.8
1979-82*	4.5	0.01		0.6

SOURCE: (a) Myrick, D.C., and L.A. Witucki. 1971. How Greece Developed Its Agriculture, Washington, D.C. U.S.D.A., Foreign Agricultural Economic Report, No 67, Pp. 6.

(b) N.S.S.G. Statistical Yearbook of Greece. Various Years. Athens: National Printing Office.

(*) subject to revision

(1) compound growth rates were calculated between end points using the formula $r=\sqrt[n]{\frac{P}{Po}} - 1$, where r is the compound rate, Po and P the beginning and end points respectively, and n the number of years.

Table B-5. Annual Change of Gross Agricultural Product for Greece, 1965-1982, 1970 Constant Prices.

Year	Annual Change	Percentage of GDP
1965	10.0	23.2
1966	0.7	22.2
1967	1.4	21.5
1968	-8.6	18.6
1969	6.4	18.1
1970	9.2	18.2
1971	3.4	17.5
1972	5.9	17.0
1973	-0.7	15.6
1974	4.8	16.6
1975	5.7	16.7
1976	-1.3	15.5
1977	-7.4	14.0
1978	10.4	14.5
1979	-6.3	13.1
1980	11.9	14.3
1981*	-1.4	14.2
1982**	3.5	14.7

SOURCE: (a) U.S. Department of Agriculture. 1982. Selected Agricultural Statistics on Greece,1965-77. Statistical Bulletin No 675, Washington, D.C.

(b) Agrotiki Trapeza tis Hellados (Agricultural Bank of Greece). 1982. "Ekthesi Ergasion tis Agrotikis Trapezas Etous 1982" (1982 Report of Activities of the Agricultural Bank), Athens. Greece. Pp 16 (in Greek).

(*) subject to revision

(**) estimates of National Accounts Service of Greece

Table B-6. Value of Greek Exports by Main Commodity Groupings, Averages, 1964-1980, Million U.S. dollars.

	1964-1966		1969-1971		1974-1976		1978-1980	
	Value	%	Value	%	Value	%	Value	%
-Agricultural Commodities	273	78.5	334	56.7	758	38.2	1,190	32.4
-Manufactured @ handicrafted commodities*	61	17.5	250	42.5	1,195	60.1	2,440	66.4
-Miscellaneous	14	4.0	5	0.8	34	1.7	45	1.2
Total	348	100.0	589	100.0	1,987	100.0	3,675	100.0

SOURCE: N.S.S.G. Statistical Yearbook of Greece, 1974, Pp. 364, 1975, Pp. 408, and 1981, Pp. 421. Athens, Greece: National Printing Office

(*) including minerals and ores

Table B-7. Agricultural Labor Force in Greece by Age, 1951, 1961, and 1971 Censuses.

Age groupings	1951 census		1961 census		1971 census*	
	Number	%	Number	%	Number	%
10 - 14	61,015	4.5	75,843	3.8	35,392	2.7
15 - 19	193,073	14.2	189,973	9.7	86,740	6.6
20 - 24	190,579	14.0	200.057	10.2	68,768	5.2
25 - 29	}	}	233,832	12.0	77,312	5.9
30 - 34	} 240,809	}17.7	229,365	11.7	117,144	8.9
35 - 44	247,855	18.3	319,030	16.3	310,024	23.6
45 - 54	201,513	14.8	339,969	17.3	239,668	18.3
55 - 64	125,757	9.3	237,171	12.1	243,420	18.5
65 and over	97,757	7.2	135,206	6.9	134,868	10.3
Total	1,358,319	100.0	1,960,446	100.0	1,313,336	100.0
Median age	33.74		35.60		42.77	
Percent of Total active Population	48.0		53.9		40.6	

SOURCE: (a) N.S.S.G. 1968. Results of the 1961 Population Census, Vol. III, Athens: National Printing Office.

(b) N.S.S.G. Statistical Yearbook of Greece, 1953, 1964, 1980, Athens: National Printing Office

(*) 25 percent sample elaboration

Table B-8. Total and Agricultural Population of Greece, 1961 and 1965-1997, (mid-year estimates).

Year	Total population (thousand)	Agricultural population* (thousand)	Agricultural population* (percent)
1961 (census)	8,399	4,520	53.9
1965	8,550	4,411	51.6
1966	8,614	4,338	50.4
1967	8,716	4,264	48.9
1968	8,741	4,189	47.9
1969	8,773	4,118	46.9
1970	8,793	4,041	46.0
1971 (census)	8,769	3,911	44.6
1972	8,889	3,916	44.1
1973	8,929	3,851	43.1
1974	8,962	3,785	42.2
1975	9,047	3,741	41.4
1976	9,167	3,715	40.5
1977	9,268	3,679	39.7

SOURCE: U.S.D.A. Selected Agricultural Statistics on Greece, 1965-1977. Pp 10. Statistical Bulletin No 675

(*) lack of official data necessitates use of F.A.O. estimated data on rural and agricultural population

Table B-9. Gross Agricultural Product per Agricultural Worker, Nonagricultural Gross Domestic Product per Nonagricultural Worker* Employed, and Ratios for 1950, 1960, and 1970.

Year	GAP per agricultural employee		GDP per nonagricultural employee**		Ratio: GAP / GDP * 100
	Dollars	Index	Dollars	Index	
1950	225	100	460	100	49
1960	395	176	1,575	342	25
1970	805	358	2,835	616	28

SOURCE: U.S.D.A. 1975. Structural Changes in West European Agriculture, 1950-1970. Foreign Agricultural Economic Report, No 114, Washngton, D.C. Pp 11

(*) excludes military
(1) average calculated after substraction of GAP from total GDP

Table B-10. Burley Tobacco Production in Specified Countries Averages, 1955-1982.

Country	1955-59	1960-64	1965-69	1970-74	1975-79	1980-82*
1. Thousand metric tons of farm-sales weight						
U.S.A.	220.7	283.0	260.4	244.9	272.6	305.4
Mexico	0.6	4.8	7.4	11.3	23.2	26.7
Brazil	na	1.8	5.2	13.4	31.2	24.7
Greece	-	1.2	8.0	12.9	17.9	19.0
Italy	11.1	11.4	20.6	37.2	46.4	51.8
Spain	11.5	17.6	15.5	16.5	23.6	33.6
Japan	4.1	8.3	11.4	15.0	22.9	18.5
Rep. of Korea	-	1.6	12.8	23.6	38.6	25.8
Malawi	1.1	1.5	2.8	5.7	9.7	21.4
Other countries (1)	20.6	20.7	29.3	61.0	90.1	97.9
World Total	269.7	351.9	373.4	441.5	576.2	624.8
2. Percentages						
U.S.A.	81.8	80.4	69.7	55.5	47 3	48.9
Mexico	0.2	1.4	2.0	2.6	4.0	4.3
Brazil	na	0.5	1.4	3.0	5.4	4.0
Greece	-	0.3	2.1	2.9	3.1	3.0
Italy	4.1	3.2	5.5	8.4	8.1	8.3
Spain	4.3	5.0	4.2	3.7	4.1	5.4
Japan	1.5	2.4	3.1	3.4	4.0	3.0
Rep. of Korea	-	0.5	3.4	5.4	6.7	4.1
Malawi	0.4	0.4	0.7	1.3	1.7	3.4
Other countries (1)	7.6	5.9	7.9	13.8	15.6	15.7
World Total	100.0	100.0	100.0	100.0	100.0	100.0

SOURCE: U.S. Department of Agriculture. Annual Report on Tobacco Statistics. Washington, D.C.:Agricultural Marketing Service. Various Years.

(1) selected countries

na = not available

(*) subject to revision

Table B-11. World and Specified Countries Exports of Unmanufactured Burley Tobacco, Averages, 1955-1982.

Country	1955-59	1960-64	1965-69	1970-74	1975-79	1980-82
1. Export weights in thousand metric tons						
U.S.A.	12.7	19.0	20.9	22.8	34.5	40.7
Mexico	-	2.3	4.7	13.4	16.7	12.4
Brazil	-	-	(*)	2.3	7 5	7 3
Greece	-	0.7	5.0	9.1	9.6	18.0
Italy	4.1	3.9	5.0	15.7	24.1	23.2
Japan	1.8	3.6	3.7	na	na	na
Rep. of Korea	(*)	0.3	1.8	6.4	14.7	21.4
Malawi	(1)	na	2.4	3.2	7.2	15.6
Other countries (2)	2.7	3.8	4.6	9.0	13.6	26.1
World Total	21.3	33.6	48.1	81.9	127.9	164.7
2. Percentages						
U.S.A.	59.6	56.5	43.5	27.8	27.0	24.7
Mexico	-	6.8	9.8	16.4	13.1	7.5
Brazil	-	-	(*)	2.3	7.5	7.3
Greece	-	2.1	10.4	11.1	7.5	10.9
Italy	19.2	11.6	10.4	19.2	18.8	14.1
Japan	8.5	10.7	7.7	na	na	na
Rep. of Korea	(*)	0.9	3.7	7.8	11.5	13.0
Malawi	(1)	na	5.0	3.9	5.6	9.5
Other countries (2)	12.7	11.3	9.6	11.0	10.6	15.8
World Total	100.0	100.0	100.0	100.0	100.0	100.0

SOURCE: U.S. Department of Agriculture. Foreign Agricultural Circular: Tobacco. Washington, D.C.: Foreign Agricultural Service. Various Issues.

(1) included with Zambia in "Other countries"
(2) selected countries

(*) included in "Other countries"
na = not available

APPENDIX C

Table C-1. Area and Production of Burley Tobacco in Agios Loukas as a Proportion out of the Total Area and Production in the District of Yiannitsa, 1974-1983.

Year	Area	Production
	Percentages	
1974	5.7	6.2
1975	5.1	6.4
1976	5.4	7.8
1977	5.6	5.6
1978	5.3	5.3
1979	5.4	6.6
1980	6.0	7.4
1981	7.7	7.9
1982	7.8	8.1
1983	8.0	8.1

SOURCE: See Table 14

Table C-2. Comparison of Yields (kg per hectare) of Burley Tobacco in Agios Loukas, District of Yiannitsa, and Department of Veria, 1973-1983. (Yiannitsa's annual yield=100).

Year	Agios Loukas		Yiannitsa*		Veria	
	Yield	Index	Yield	Index	Yield	Index
1973	3,317	-	na	-	na	-
1974	3,124	109	2,854	100	2,941	103
1975	3,208	125	2,564	100	2,494	97
1976	4,240	145	2,917	100	2,480	85
1977	2,892	101	2,851	100	2,875	101
1978	3,855	106	3,638	100	3,525	97
1979	4,522	123	3,662	100	3,489	95
1980	4,300	125	3,438	100	2,981	87
1981	3,460	105	3,293	100	3,174	96
1982	3,500	104	3,354	100	3,197	95
1983	2,719	108	2,524	100	2,533	100

SOURCE: National Tobacco Board. Office of Yiannitsa. Unpublished Statistical Data.

(*) excluding Agios Loukas
na = not available

Table C-3. Use of Cultivated Land in Agios Loukas:1961,1971, and 1981.

	Annual crops	(1) Fallow	Grass	Vine-yards	Tree crops	Total
A. Agricultural operations						
1. Number:						
1961	234	3	1	17	48	237
1971	226	1	-	7	51	232
1981	161	1	-	3	79	180
2. Index:						
1961	100	100	100	100	100	100
1971	97	33	-	41	106	98
1981	69	33	-	18	165	76
B. Agricultural area (2)						
1. Hectares:						
1961	617.8 (95.5)	7.1 (1.1)	0.3 (-)	2.6 (0.4)	19.1 (3.0)	646.6* (100.0)
1971	718.3 (90.9)	0.7 (0.1)	- (-)	1.1 (0.1)	70.5 (8.9)	790.6* (100.0)
1981	691.5 (87.6)	0.9 (0.1)	- (-)	2.5 (0.3)	94.5 (12.0)	789.4* (100.0)
2. Index:						
1961	100	100	100	100	100	100
1971	116	10	-	42	369	122
1981	112	13	-	96	495	122

SOURCE: (a) N.S.S.G. 1966. Results of the Agriculture-Livestock Census of March 19, 1961, Vol. I, Pp.17. Athens:National Printing Office.

(b) -------. 1978. Results of the Agriculture-Livestock Census of March 14, 1971, Vol. I, Pp.298. Athens:National Printing Office.

(c) -------.Analysis by the author for the 1981 census.

(1) includes land not cultivated for up to 5 years

(2) numbers in parentheses refer to percentages

(*) 84.3 hectares outside the farming area of Agios Loukas for 1961; 252.5 hectares for 1981; hectares outside Agios Loukas were not available for 1971.

Table C-4. Family Composition of Units Engaged in Farming. Agios Loukas, 1981.

Family Structure	Operations	%
I. Nuclear Family Operations	**157**	**87.7**
1. One-Person Operation (Male)	29	16.2
Widower farmer	2	1.1
Divorced farmer	1	0.6
Unmarried farmer	2	1.1
Married farmer (wife not engaged in farming)	24	13.4
2. One-Person Operation (Female)	3	1.7
Widow	2	1.1
Divorced	1	0.6
3. Two-Person Operation	74	41.3
Farmerandhiswife	65	36.3
Farmerand son	6	3.4
Widow and son or daughter	2	1.1
Unmarried farmer and his sister	1	0.6
4. Three-Person Operation	25	14.0
Farmer-wife-son or daughter	21	11.7
Farmer and two youngs	2	1.1
Widow and two youngs	1	0.6
Widower and two youngs	1	0.6
5. Four-Person Operation	22	12.3
Farmer-wife-two youngs	22	12.3
6. Five Person Operation	4	2.2
Farmer-wife-three youngs	3	1.7
Farmer-four youngs	1	0.6
II. Extended Family Operations	**22**	**12.3**
1. Two-Persons Operation	3	1.7
Farmerandhismother	1	0.6
Farmer and his married son	2	1.1
2. Three-Person Operation	9	5.0
Farmer-wife-unmarried brother or sister	3	1.7
Farmer-married son and his wife	3	1.7
Farmer-wife-married daughter or son	3	1.7
3. Four-Person Operation	8	4.5
Farmer-wife-married son and his wife	5	2.8
Farmer-wife-married daughter and her husband	1	0.6
Farmer-wife-two unmarried brothers or sisters	1	0.6
Farmer-married couple-unmarried son	1	0.6

Table C-4. Family Composition of Units Engaged in Farming. Agios Loukas, 1981. (continued)

Family structure	Operations	%
4. Five-Person Operation	2	1.1
Farmer-wife-two youngsters-unmarried sister	1	0.6
Farmer-wife-married couple-unmarried young	1	0.6
All family operations	179	100.0

SOURCE: N.S.S.G. 1981 Census of Agriculture. Analysis by the Author.

Table C-5. Allocation of Labor Inputs for the Average Family Farm Worker, Agios loukas, 1981.

Allocation of labor:	Males		Females		Total:		
	Days	%	Days	%	All farms	Average	%
Family farm	152.7	76.0	117.8	82.2	60,458	138.0	78.1
Other farms	9.9	4.9	13.4	9.3	4,990	11.4	6.5
Off-farm work	38.3	19.1	12.2	8.5	11,959	27.3	15.4
Total	200.9	100.0	143.4	100.0	77,407	176.7	100.0

SOURCE: N.S.S.G. 1981 Census of Agriculture, Analysis by the Author.

Table C-6. Acquisition and Use of Tractors (over 18 HP). Agios Loukas, 1952-1984.

Year	Number of tractors: Added	Removed	Operated
1952	1	-	1
1953-55	-	-	1
1956	1	-	2
1957	2	-	4
1958	-	-	4
1959	6	-	10
1960	4	-	14
1961	3	-	17
1962	2	-	19
1963	4	-	23
1964	4	-	27
1965	1	-	28
1966	6	-	34
1967	17	-	51
1968	13	4	60
1969	18	2	76
1970	19	1	94
1971	na	8	82
	Net change*		
1972	1		83
1973	-11		72
1974	-2		70
1975	0		70
1976	-4		66
1977	20		86
1978	8		94
1979	3		97
1980	3		100
1981	22		122
1982	33		155
1983	na		na
1984 (May)			179

SOURCE: (a) Community Archives up to year 1970.
(b) N.S.S.G. Annual Agricultural Survey of Greece, Agios Loukas Data. 1971-1982.
(c) Local Informants for May 1984.

na = not available

(*) data in this column represent the algebraic sum of tractors added minus tractors removed and was calculated using data on the number of operated tractors

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