FARM SIZE, LAND PRODUCTIVITY AND FACTOR UTILIZATION: THE ECONOMIC CASE FOR GUATEMALAN LAND REFORM IN 1950

by

Dylan Ramshaw

Supervisor
Kris Inwood

Second Reader
Spencer Henson

April 2004

DEPARTMENT OF ECONOMICS

UNIVERSITY of GUELPH

Acknowledgments

I am grateful for the guidance and advice of Dr. Kris Inwood. Also, many thanks to James Northey, Katerina Koka, Jason Dean, Corey Reinecker, and Robin Banerjee for their technical support. Finally, thank you to all my friends and family.

Abstract

This paper analyzes the relationship between farm size and land productivity of Guatemalan farms in 1950. A negative relationship is found between farm size and total output. As well, a negative or insignificant relationship is observed between farm size and the majority of crop yields. The higher land productivity by smallholdings is mainly ascribed to greater land utilization and the more intensive use of labour per area harvested. This paper concludes that the implementation of a successful land reform program in Guatemala would have increased agriculture output in addition to reducing land and income inequalities. Therefore, land redistribution would have increased the average income, provided greater employment, and therefore contributed to the alleviation of rural poverty.

Table of Contents

List of Tables and Figures

Chapter I: Introduction

The agricultural structure of Guatemala in 1950 can be characterized as being extremely dualistic in nature. The majority of farms operated on plots that produced relatively low value crops for subsistence or regional trade. The larger farms, which represented the minority of the number of units but a greater proportion of land area, produced crops for export that tended to be of higher value. At the time, Guatemala was a rural society that depended greatly on agriculture as a source of livelihood. In 1950, 75 percent of the population was classified as rural and 68 percent of the labour force was employed in the agricultural sector.[1] The rural population's dependence on agriculture and the unequal distribution of land therefore created substantial income inequalities. The purpose of this study is to analyze the efficiency with which land was used on farms of different sizes. I will argue that the implementation of a successful land reform program would have increased agriculture output because of higher land productivity exhibited by smaller farms. The higher land productivity by smallholdings was achieved through greater land utilization and the more intensive use of labour.

The focus of this paper is primarily on the relationship between factor utilization and land productivity. It is recognized that land tenure relationships can affect the productivity of agricultural operating units, especially with regards to labour productivity. A considerable amount of literature examines land tenure arrangements (eg. sharecropping) and land titling in relation to productive efficiency. The restructuring of these arrangements is a major element of any agrarian reform program. Nevertheless, the focus of this study is on the process of land reform, which is the redistribution the existing farm area into smaller operating units.

Typically social and political conflict accompany the restructuring, regardless of the type of reorganization, whether it is redistribution or changes to ownership arrangements. These conflicts arise when reforms of this nature are implemented and there are vested

[1] Guatemala, Ministerio de Económia, Dirección General de Estadística (DGE), Censo Agropecuario 1950 (1954).

political interests in the redistributed resource, or when there is divide between groups of society. These conflicts were a central cause of the discontinuation of the Guatemalan Agrarian Reform program in 1954. I recognize these conflicts, however this study focuses on one aspect of agrarian reform in terms of economic productivity using existing theory and empirical analysis. Nevertheless, these changes may reinforce the political and social institutions in the long term.

This study will begin with a brief account of the historic evolution of the Guatemalan agricultural system from the beginning of Spanish colonialism to the state of inequality that existed in 1950. Subsequently, there is an examination of the process of Agrarian Reform Program that began in 1952 but came to an abrupt end in 1954. This provides a foundation for understanding the economic and political state of agriculture in Guatemala at the time. Following the historical background, I review the theoretical and empirical evidence regarding farm size and land productivity. This provides the framework for the analysis that will follow. First, the data used in this study are described and scrutinized, and consequently the methodology used in the analysis is explained. Finally, the results obtained from constructing output at the national, departmental, and farm size level assist in determining the extent of the agricultural dualism that existed in 1950. This output by farm size is then analyzed using OLS regression techniques to determine the relationship between land productivity and farm size. The results of this analysis will be supported by specific examination of the land productivity of some specific crops, and the relationship between farm size and the use of land and labour.

Chapter II: The Structure and Reform of Guatemalan Agriculture

(i) Historical Context

The unequal access to land in Guatemala was a result of the continued concentration of ownership through forced coercion and oppressive labour laws. The Spanish Conquistadors upon arrival in Guatemala instituted a feudal system of agriculture that replaced the preceding system of indigenous land rights. To secure the property of the Spanish landlords and to provide labour to work the newly established estates, laws were implemented to further colonial control, and to extract resources from the colony. The *encomienda* and the *mandamiento* system designated the indigenous peoples as servants to the ruling elite and plantation owners. The *economienda* system entrusted groups or villages of indigenous inhabitants to the new colonial rulers, *encomenderos*, to be converted to Catholicism in exchange for tribute, which usually entailed labour. This system became the bases of what soon transformed into institutional slavery and agricultural production resembled a feudal system.[2]

After the abolition of the *encomienda* system in the early eighteenth century, the *mandamiento* system emerged, which required the indigenous peoples of designated communities to work for periods of time on plantations. The labourer would have usually worked to pay for an advanced loan. These loans either were requested by the worker or forced on him/her by an employer. This process left many labourers indebted to their employers. Often their subsistence plots were confiscated in the process. The *mandamiento* system continued until the late 1900s.[3]

Other forms of forced labour arose in the late nineteenth century that legislated debt peonage or the abolishing of 'vagrancy' as a solution to the labour problems on the plantations. After the demise of the *mandamiento* system, new legislation was implemented that focused on labour contracts. These contracts bound workers to their

---

[2] Chester Lloyd Jones, Guatemala: Past and Present (New York: Russell & Russell, 1966) 115.
[3] Nathan Whetten, Guatemala: The Land and the People (New Haven:Yale University Press, 1961) 118-9.

employers until their debts were paid or until other terms of their contracts had been fulfilled. The system of debt peonage was abolished in 1934 and was subsequently replaced by a national vagrancy law. This law required any person without a trade or profession, or not cultivating specified amounts of land to be obligated to work for others, usually plantations, for a specified period. This law singled out the indigenous population since they usually operated an insufficient amount of land.[4]

The continuous process of oppressive labour laws and the lack of access to productive lands from Spanish conquest to the middle of the twentieth century contributed to an extremely unequal land distribution. Table 1 shows that over 95% of the farms by 1950 in Guatemala held less than 30% of all agriculture land. In contrast, less than 5% of the farms controlled over 70% of these lands. Examining the distribution of farms at the department level, it is clear the majority of the smaller farms (*minifundios*) were located in the highland regions of the country where the population density was the greatest, and the land tended to be of lower quality, and the distribution of land was more equal. On the other hand, the larger farms (*latifundios*), which owned a majority of the farm area usually held the most productive and therefore the most valuable land in the country. In general, these lands were located on the coastal plains and the mountain slopes of the coastal mountain ranges.[5]

Table 1: National Distribution of Farms and Farm Area by Farm Size[a]
(Source: Censo Agropecuario de 1950)

Farm Size	Number of Farms	% of Total Number of Farms	% of Total Farm Area
Less than 2 manzanas	165,850	47.6	10.1
2 to less than 5	99,779	28.6	5.3
5 to less than 10	42,444	12.2	4.9
10 to less than 32	26,916	7.7	7.8
32 manzanas to less than 10 caballerías	12,613	3.6	25.1
10 to less than 20	569	0.2	8.9
20 to less than 50	358	0.1	12.4
50 to less than 100	104	0.03	8.2
100 to less than 200	32	0.009	4.9
200 caballerías and greater	22	0.006	12.5
Total	**348,687**	**100.0**	**100.0**

[a] See Appendix C for Departmental Distribution of Farms and Farm Area by Farm Size

[4] Jones 160-4; Whetten 119-21.
[5] See Appendix C, Table A1: Farm Distribution by Department and Table A2: Farm Area Distribution by Department

The *latifundios* and other plantation type farms relied mostly on migratory workers and *mozos colonos*. The migratory workers provided additional labour to the plantations during the harvest season. A majority of these migratory workers came from the highlands to work in the coffee and sugar plantations on a contract basis for tasks performed. However, the *mozos colonos* resided on the plantation year round. The plantations provided these workers with small plots to grow subsistence crops when they were not acting as farm labourers. The *colonos* provided a minimum labour supply when the plantation was not in harvest season.[6]

In summary, the *latifundio-minifundio* system that arose following Spanish colonialization had created deep economic and social divide in the countryside of Guatemala. The *latifundias* had forced a majority of the landless and small-scale farmers to become low-wage migratory workers in order to supplement their subsistence income. The successive dictatorships, which plagued the nation throughout the following centuries, reinforced the existence of this system, often through the oppression of labour rights and a bias in government policy in favour of export producers.[7] This process of the acquisition of land by a few wealthy landowners, including politicians and the military, continued until the Guatemalan Revolution of 1944.

(ii) Agrarian Reform Program of 1952

Prior to 1944, there had been few attempts made by the governments of Guatemala to initiate legislation to change the unequal structure of agriculture. Most of these attempts focused on the promotion of the export sector. These were not efforts to improve the economic situation of rural society. They sought to increase the incomes of those who had interests in this sector, many of whom were officials of these governments. However, the new peasant-backed government of Guatemala sought to reduce income inequality by

---

[6] Whetten 98-100.

[7] Jim Handy, Gift of the Devil: A History of Guatemala (Toronto: Between the Lines, 1984) 63-9.

providing greater access to agricultural land.[8] They aspired to diminish the power that the land holding elite, and to initiate change that would improve the situation of the smallholders, the landless, and the agricultural labourers.

The Guatemalan Constitution of 1945 prohibited the further creation of *latifundios* and prevented the ones already in existence from expanding. However, it guaranteed private property, unless it was deemed to be in the public interest to be expropriated. Additionally, labour rights were provided to workers on plantations, which allowed them to organize, and to demand concessions, privileges, and benefits.[9] Also, the abolition of the vagrancy law finally afforded the inhabitants of the highlands the right to choose whether to work on the haciendas and plantations. Furthermore legislation in 1949, which became known as the Law of Forced Rental, was employed to impel large farms to bring into cultivation unused land by forcing the landlords to rent uncultivated land to others. This rental price was legislated at a fixed rate to reduce the exploitation of renters. However, due to the inability of the administration to enforce the legislation, the land reform resolutions in Guatemala failed to develop.[10]

It was not until a new administration was elected in 1950 that a land reform program came to full fruition. This new government, headed by Jacobo Arbenz, aimed to create economic efficiency and promote equity by replacing the current semi-feudal system of agriculture with a more progressive system that sought to include the marginalized subsistence farmers and labourers.[11] The Agrarian Reform Law passed in 1952, which restated some of the previous legislation passed in 1945, gave substantially more power to the state in terms of expropriatory power.[12] It again assured the rights of private property, prohibited the latifundia system, and allowed for the expropriation of private property in the public interest.

---

[8] Jim Handy, Revolution in the Countryside: Rural Conflict and Agrarian Reform in Guatemala (Chapel Hill: University of North Carolina Press, 1994) 78.
[9] Whetten 152.
[10] Handy, Gift of the Devil 124; Whetten 153.
[11] Handy, Revolution in the Countryside 89.
[12] Whetten 153.

The administrators of the Agrarian Reform Law actively sought to restructure the agrarian system through expropriation and redistribution. The Law stated that any owner that operated a farm less than 219 acres was not threatened by expropriation. On the other hand, those farms occupying between 219 and 488 acres and not cultivating at least three quarters of their land were susceptible to expropriation. Any farm greater than 488 acres would lose a share of their unused lands. Expropriated land was paid for by the state with government issued bonds.[13] In this respect, the law was not an attempt to remove productively utilized land from private ownership. The law primarily focused on the large semi-feudalistic estates that were underutilizing their land, which tended to be some of the most productive land in the country.[14]

Workers and *mozos colonos* were given priority to receive the expropriated land from the national or large private farms from which they worked.[15] Most of the national farms either had been consolidated under previous dictatorships or were land expropriated from German nationals during World War II. These highly productive lands primarily produced cash crops such as coffee and sugar.[16] The amount received per recipient through redistribution was between 5 and 10 manzanas (8.65 to 17.3 acres) of cultivated land, or 15 to 25 manzanas (25.95 to 43.25 acres) of uncultivated land.[17] In theory, other workers from other areas could receive expropriated land after the local recipients had been compensated.[18] This distributed land was accompanied by access to credit through the National Agrarian Bank.[19]

In a brief time the Agrarian Reform Law created social, economic, and political changes that had never been realized in the past. As would be expected, the land reform law and the subsequent expropriation and redistribution encountered social and political problems. These troubles arose from the vagueness of the laws themselves and the

---

[13] Handy, Gift of the Devil 128.
[14] Whetten, 154.
[15] Handy, Revolution in the Countryside 91.
[16] Lehman B. Fletcher, et al., Guatemala's Economic Development: The Role of Agriculture (Ames, Iowa: Iowa State University Press, 1970) 62.
[17] See Appendix A: Weights and Measures Used in This Study
[18] Handy, Revolution in the Countryside 91-2.
[19] Whetten 156.

misinterpretation that ensued. The laws were vague in that they did not properly define what constituted the productive use of land. Also in some regions there was a misconception that all farmland would be distributed, regardless of farm size. This resulted in land invasions, and disillusionment in the reforms themselves. Furthermore, there was an escalation of ethnic and class violence, and of violence between communities as the Agrarian Law began to divide interest groups.[20]

Regardless of the social and political upheaval in the short-term, the reform increased a significant proportion of the rural population's access to productive land in a relatively brief period, without causing severe economic disruptions. By 1954, it was estimated by the government administration that 60.5 percent of the redistributed land was expropriated from private hands and the remaining from national, state and municipal holdings. Approximately 917, 659 acres had been expropriated from private owners, and it had been redistributed to 87, 569 persons. This averages to 10.5 acres per person.[21] Moreover, 107 national farms were partitioned and distributed to 7,822 small farms and 46 co-operatives. This redistributed land represented approximately 17 percent of all agricultural land in the country.[22] Furthermore, the yields of corns and beans rose from the harvest of 1950 to 1953. Additionally, coffee production expanded in this period, which can most likely be attributed to the increase in incentives for large farmers to cultivate previously unused land.[23]

There were both beneficial and negative consequences as a result of the Agrarian Reform Law. However, the long-term effects did not come to fruition due to the abrupt end of the Arbenz regime in 1954. Both political and economic interests within and outside Guatemala became increasingly concerned about the unrest in the countryside, the perceived communist infiltration into high-ranking positions in the government, and the expropriation of private land, in particular from foreign owned plantations. The United

---

[20] Handy, Revolution in the Countryside 99-136.
[21] Whetten 162-3.
[22] Guatemala, Ministerio de Económia, Dirección General de Estadística (DGE), Censo Agropecuario 1950 (1954).
[23] Handy, Gift of the Devil 128-9.

States government began to pressure the Arbenz administration after the expropriation of banana plantations owned by the United Fruit Company of Boston. Furthermore, they were concerned by the influence of high-ranking communist advisors in government positions.[24] The concern over the government's refusal to repress communist organizations also came from the military and the urban middle class, who were former supporters of the revolution. Both felt that these organizations had acquired too much control in the rural areas and in the press.[25] The discontent in June 1954 led to an invasion launched from Honduras by former Guatemalan military exiles, who were assisted and trained by the CIA.[26] This invasion faced little resistance and forced Arbenz to resign. The new government, headed by Colonel Carlos Castillo Armas, suspended the Agrarian Reform Law and returned much of the expropriated land to their previous owners.[27]

---

[24] Handy, Revolution in the Countryside 171-75.
[25] Ibid. 75.
[26] Ibid. 169.
[27] Whetten 162.

Chapter III: Farm Size and Land Productivity: Theory and Evidence

The issue of rural inequity and land reform has attracted scholarly attention from a number of disciplines including economics. Economic research related to farm size and productivity has produced results in favour of small-scale units as opposed to large-scale systems of agriculture in developing countries. The research is based on the analysis of returns to scale and relative factor utilization on farms of different size. The following review will focus on the theoretical approaches and empirical evidence of yields and factor utilization among different farm sizes.

(i) Theory

The theoretical argument for smaller rather than larger operational units can be divided into two approaches. Firstly the debate of whether there are returns to scale in agriculture. This theoretical analysis looks solely at the relationship of the quantity of output as the amount of inputs change. The other consideration is the efficiency of resource utilization, and in the case of agriculture this would pertain primarily to the use of the land, the primary capital resource, versus labour.

Berry and Cline recognize two cases where there may be increasing returns to scale in agriculture. There may be a minimum requirement of land needed to raise cattle or a minimum scale needed to fully utilize machinery. Berry and Cline dismiss both of these situations. They ascertain that cattle grazing can be done on an extensive or intensive basis, and therefore there does not seem to be a minimum basis for the raising of cattle. They also consider minimum machinery requirements to be irrelevant given the capital scarcity and labour abundance facing most developing countries. Therefore, in the case of developing countries the difference in factor costs would favour the use of relatively cheaper labour rather than more expensive capital investment.[28] Griffen et al. agree that in labour abundant countries economies of scale are unimportant. However, as the size of

[28] R.A. Berry and W.R. Cline, Agrarian Structure and Productivity in Developing Countries (Baltimore, Maryland: The John Hopkins University Press, 1970) 5-6.

the agricultural labour force declines as development occurs, farm mechanization becomes more essential and therefore economies of scale could become important. They also acknowledge that economies of scale become more significant in other aspects of the rural economy such as agricultural processing, marketing, purchasing of inputs, and investment in irrigation and drainage.[29]

When considering factor utilization, one must evaluate the most profitable combination of inputs for a given farm size. The combination of inputs may change as farm size changes because there is a minimum input cost combination for each farm. Bachman and Christmas define the efficiency problem as the quantity levels and proportions of scarce resources that achieve the minimum cost expansion of production. However, they recognize that the supplies and costs of factor proportions differ among countries and farm sizes.[30]

The costs of factor proportions differ markedly in the presence of labour market dualism. Berry and Cline define this dualism as a dichotomy between use of family labour on small farms and hired labour on large farms.[31] In an environment of excess labour supply, large farms will employ labour to the point where its marginal product equals such a wage rate. This point may be lower than the level needed to employ the amount of labour in the economy and therefore many labourers are left unemployed. As a result, smaller farms are left with excess labour not employed on the larger holdings. This leads to a lower opportunity cost of labour or low implicit wage rate on smaller farms, and therefore they exploit marginal land and utilize the available land resource to a greater extent.[32] Even though, this implies more labour use, there is a low and decreasing marginal productivity.

---

[29] Keith Griffen, Azizur Rahman Khan and Amy Ickowitz, "Poverty and the Distribution of Land," Journal of Agrarian Change, Vol. 2, No. 3 (2002), 317-8.
[30] Kenneth L. Bachman and Raymond P. Christensen, "The Economics of Farm Size," in Agricultural Development and Economic Growth, Herman M. Southworth and Bruce F. Johnston, editors (Ithaca, N.Y: Cornell University Press, 1967) 237.
[31] Berry and Cline 29.
[32] Ibid. 8.

Alternatively, the cost of land and other forms of capital are relatively higher on smaller farms than compared to larger farms. Large landowners often have advantages in acquiring commercial loans from formal lending institutions; smaller farms are less attractive clients due to insecure land titling, insufficient collateral, or their lower level of literacy. Smallholders often rely on informal credit markets where interest rates are substantially higher.[33] These capital market imperfections, along with the relatively higher factor price of labour for large holders, justifies the further substitution of capital for labour and results in the continued reduction in the labour to land ratio.[34]

Griffen et al. also acknowledge a fragmentation in the market for land in developing countries. They define this fragmentation as a market that is highly localized and with low sales volumes. The high opportunity cost of land for small farmers, due to the scarcity of the resource, leads to low sales volumes. In contrast, the opportunity cost on larger farms is relatively low because of the comparative wealth of land under their control. One would expect the larger farmers to sell their land to the smaller farmers for a higher price than their opportunity cost because the smaller a farmers would be willing to pay this higher price, which corresponds to their ability to obtain a higher return. However, in a localized market the landlords have monopsony power in the labour market. If they were to sell their land, they would cede their control of the labour market and they would have to pay higher wages, charge renters a lower rental rate, or allow sharecroppers to keep a higher share of their crop.[35] Griffen et al. maintain that there is a high degree of monopsony power wherever there is a high degree of land concentration, and this concentration should be considered a form of institutional control. The wage offered by the larger farms is below the opportunity cost of labour for the rural workers. They can choose to work for the landowner at the given wage, remain unemployed, or work on marginalized plots of land that often are not sufficient enough to provide

---

[33] Griffen et al. 286.
[34] Berry and Cline 29.
[35] Griffen et al. 285-6.

subsistence. In other words, the landlords are price-makers and the labour force is a price-taker. This results in the illusion of surplus labour, and inefficient production.[36]

Labour and land market fragmentation both lead to the underutilization of land. However, the underutilization of land relative to labour can be further accentuated where land is obtained and owned for purposes other than for operating for profitable production. Where a dual size structure exists, landowners obtain and hold land for prestige, speculation and a hedge against inflation.[37] Therefore, the ownership of land is not the primary source of income because the value of the land is lower than other factors of production. Given that landowners are not producing for profit, land becomes underutilized.[38] This undervaluing of land leads to its extensive use, which Bachman and Christmas determine is a public cost when faced with an excess labour supply. The unemployed or unproductively used labour on small farms is not a private cost incurred by the large farms. However, this unemployed or inefficient labour represents foregone production because the unemployed labour would add more to total farm output if employed by larger farms. Alternatively, the division of large holdings, when merged in more efficient proportions with other capital and excess labour, may add more to total output.[39]

In summary, the theoretical literature concludes that there may be higher productivity of land on smallholdings due to a more intensive use of the abundant labour resource and the relatively higher cultivation of the more expensive land resource. Factor price differentials arise when there is labour market dualism, capital market imperfections, and fragmentation in the land market. These varying relative factor prices result in differing factor utilization. Consequently, small farms cultivate more land and farm this land with more intensely with greater amounts of labour. Larger farms cultivate relatively less land and use labour less intensely. The incentive for large landholders to cultivate higher

---

[36] Ibid. 288-9.
[37] Berry and Cline 11; Bachman and Christmas 241.
[38] Berry and Cline 11.
[39] Bachman and Christmas 241-2.

proportions of there land is further diminished when they operate the land for other purposes than production, such as for prestige, speculation, and to hedge against inflation.

(ii) Empirical Evidence

The work of Berry and Cline (1979) and Cornia (1985) has been influential in the study of agricultural structure and land productivity.[40] These studies incorporate a wide range of developing countries with respect to economic, ecological, and cropping systems. Both of these analyses show an inverse relationship between farm size and agricultural yield as a result of the more intensive use of land by small farms. The authors argue that gains in output, employment, and therefore a reduction in poverty could be achieved by means of land redistribution.

The study by Berry and Cline addresses the question of whether large farms are more or less efficient than small farms, and to what extent land reform could possibility affect production and equity. In addition, their analysis focuses on the distortions in the utilization of existing resources as a result of the structure of ownership and factor market imperfections. Furthermore, they evaluate and compare potential benefits of land reform between regions that differ in their endowments of land and labour. Berry and Cline's study includes an extensive analysis of twenty countries and an intensive analysis of six developing countries.

In their cross-country analysis, Berry and Cline use 1960 farm data for twenty countries. The Food and Agriculture Association (FAO) originally compiled this data from the agricultural censuses for each of these countries. The principal data used by Berry and Cline in their extensive analysis is land use by farm size because of limitations of farm output in the censuses. They define the large-farm sector as all farm-size classes, which

[40] R.A. Berry and W.R. Cline, Agrarian Structure and Productivity in Developing Countries (Baltimore, Maryland: The John Hopkins University Press, 1970); Giovanni Andrea Cornia, "Farm Size, Land Yields and Agriculture Production Function: An Analysis for Fifteen Developing Countries," World Development Vol. 13, No. 4 (1985) 513-534.

comprise the top 40 percent, and the small farm sector as those that comprise the bottom 20 percent of total land area. As a result of defining the large and small farm sectors, they formulate relative large-farm land utilization. This is defined as the percentage of land cultivated by the large-farm sector divided by the percentage of land cultivated by the small-farm sector. The results find relative large-farm utilization to be below unity for all countries, except for Taiwan and Korea. These two countries have comparatively more egalitarian agrarian systems.

The intensive analysis of six countries by Berry and Cline confirms the results of the cross-country study, but also provides insight into land productivity and land use intensity by farm size. The authors use a variety of methods to analyze agricultural censuses and farm surveys from the sixties and seventies. In some cases, several ratios are used to determine land productivity such as output per farm area, output per area cropped, or output per area cultivated. Where detailed data was available, the proportion of value added to farm area, or the proportion of production under irrigation to area planted is analyzed by farm size. Also, more rigorous examinations are done using regression analysis. In the case of Brazil, three regressions are estimated:

(a) $Q/X = a + b \log X$
(b) $Q/V = a + b \log V$
(c) $Q/X = a + b \log X + c P$

Where Q is gross output value, X is the farm size in hectares, V is the total land value, and P is the average land price per hectare. Regression (c) is performed with dummy variables representing physiographic zones, where the constant was allowed to shift, and then repeated to allow for both the constant to shift and the coefficient on the log X variable.

In addition, for those countries with sufficient data (Brazil, Columbia, Malaysia, and India), total social factor productivity is analyzed. Total social productivity is the ratio of gross output to value of factor inputs, such as land, capital and labour costs. Although

there is some uncertainty concerning the determination of the social prices to apply to these input costs, it does provide further insight into the relationship between farm size and social efficiency by looking at other factors besides land.

Berry and Cline also analyze land use intensity in these countries through the examination of labour input per farm area, capital per farm area, and capital to labour ratios.

Berry and Cline conclude that there is a negative relationship between farm size and output per unit of land. They find this relationship holds regardless of the influence of land quality, either in the form of land price or when including the levels of irrigated and unirrigated land in the analysis. In addition, they find total social factor productivity declines as farm size rises. However, in some of the countries the smallest farm sizes have a lower social productivity and for larger farm sizes it declines less compared to output as farm size increases. They conclude that this outcome is a result of smaller farms utilizing a greater proportion of available land in cultivation and the higher use labour per area of land cultivated.

Cornia analyzes the relationship between factor inputs, land yields, and labour productivity for farms of different sizes in 15 developing countries. In part, the objective of this study is to show that there is a negative correlation between farm size and factor inputs and yields per hectare. The author uses data collected by the FAO Farm Management and Production Economics Service between1973 and 1979 for fifteen developing countries. From the data the author is able to derive 32 variables for each farm, 17 original indicators and 15 ratios. Farm size is defined by intervals, and the sizes of these intervals vary from country to country. Cornia performs regression analysis for each of the fifteen countries. Gross output is constructed using US dollars and prices from 1970. National figures are converted into 1970 domestic prices by means of the implicit price deflator of the agricultural value added, and then transformed into dollars using the 1970 exchange rates. The following model is estimated for each of the fifteen countries:

$$\log GO/LN = a + b \log LN$$

Where GO = gross output and LN = farm area.

Cornia finds a negative and significant inverse relationship between farm size and land productivity in all but three of the countries. These three countries, Peru, Bangladesh, and Thailand, all have no statistically significant relationship between farm size and land productivity. The author accounts for these results because of the limited number of observations and a general lack of information for Thailand and Peru, and a weakening of the relationship in Bangladesh, because of the lack of farm size differentiation.

With regards to land utilization, Cornia defines land use intensity (LUI) as the ratio of cropped land to total farm area (LN). The following model is estimated for each of the fifteen countries:

$$\log LUI = a + b \log LN$$

The results show a negative relation between land use and farm size in nine out of the fifteen countries, and no relation for three of the countries.

In conclusion, Berry and Cline, and Cornia find that the negative relationship between yields and farm size can be attributed to higher land use and the more labour intensive cultivation by smaller farms. In other words, smaller farms obtained higher productivity from the scarcest resource by utilizing the most abundant resource more intensely. As a result of these findings, both Berry and Cline, and Cornia conclude that one of the main policy measures pertaining to a developing country should be the implementation of land reform to increase output, and to reduce land and income inequality. Consequently, there will be a reduction in rural poverty. As well, the authors claim the benefits of redistribution clearly are more beneficial where the level of land inequality is the greatest, and this process should be accompanied by credit and technical assistance.

Chapter IV: Methodology

(i) Illustration of the Data

The data in this study was primarily obtained from the Guatemalan Agricultural Census of 1950. This census was carried out in connection with the Food and Agriculture Organization of the United Nations with the objective of acquiring greater knowledge of the food resources of the member countries to provide greater guidance for their associated programs.[41] The data include the number of farms, the cropped area, and the total production for the year of 1950. These data are provided at the national and departmental levels by farm size. All farm sizes were measured in manzanas or caballerías. The census divides operating units into 12 size intervals ranging from less than one manzana to greater than 200 caballerías. With respect production units all crops are measured in hundredweights, with the exception of bananas, which are given in bunches.

A few notes should be made concerning the quality of the data, which may or may not affect the results of this study. Firstly, due to data limitations, total output is measured in gross terms because the value of inputs could not be obtained. Furthermore, farm size refers to total land area and therefore not the total value of all inputs as would be ideal. In this instance when analyzing economies of farm size the sole criteria is output per unit of land.

Secondly, the value of the land is not taken into account. Value can be a measure of the physical productivity of the land, proximity to markets and the capitalized value of monopsony power in the labour market. Sometimes land can be converted into 'irrigated equivalent' units, however indicators seldom incorporate differences in land quality, and therefore in this instance land is treated as if it was homogeneous.

---

[41] Guatemala, Ministerio de Económia, Dirección General de Estadística (DGE). Censo Agropecuario, 1950 (1954) 1.

Thirdly, due to the organization and collection of the data by the census officials some of the variation in the sample size was lost. The operational units are organized by intervals according to farm size, which will undoubtedly reduce some variation in the sample. Furthermore, these size intervals prevent the measurement of a land concentration indicator, such as the Gini Coefficient. The variation of the data is also reduced by the intentional or unintentional omission of some of the smallest operational units below the size of one manzana during the data collection process.

Lastly, it should be acknowledged that although the data collected in the Guatemalan Census is in a standardized form, there must be a degree of flexibility and awareness of the possibility of a certain degree of arbitrariness concerning the data collection. This may have been due to the political changes in Guatemala at the time, which may have biased the collection process by the officials, or by the farmers themselves who may have been biased when reporting their farms.

(ii) Analytical Framework

The initial analysis of the Guatemalan agricultural structure requires constructing gross output by department and farm size to determine the crop composition of this output. This provides insight into the inter and intra-departmental differences in farming practices, which can be used to examine variations in productivity. The crops are selected based on the criteria that their total land harvested represented at least 5 percent of the total land harvested for at least one department for that given year. Based on this criterion, ten crops remain and they are used to construct gross output for each of the departments and their respective farms sizes. To construct the value of gross output from the total output provided in the census, the production data are transformed into values expressed in US dollars by estimating the 1950 prices in Guatemala for the selected crops, and then converting these prices into Guatemalan quetzales. The crops and their respective estimated prices are listed in Appendix B.

Some assumptions are made due to a few discrepancies in the data. Firstly, the departmental production by farm size for millet, broad beans, and tobacco is not provided in the census. However, the census does provide total output of these crops by department. Therefore, the national distribution of production by farm size is projected on the each of the departments based on their individual total outputs. The other issue that has to be addressed is the absence of sugar cane production in the census. Therefore, the production of sugar cane per manzana is assumed and applied to all farm size intervals for each department.[42] These data inconsistencies reduce the variation of gross output by farm size between departments because the distributions of these crops are extrapolations of their respective national distributions, or in the case of sugar cane there is no production variation. On the other hand, with the exception of sugar cane, these crops are not as significant for land use and output value as the other crops.

Following the determination of gross output and crop output by farm size, regression analysis is performed using departmental observations. A more rigorous analysis of crop yields could not be performed for tobacco, broad beans, and millet due to the lack of sufficient data at the departmental level. Additionally, sugar cane is excluded from the crop analysis since the yield per manzana is assumed to be constant among farm sizes. However, all crops are included in determining the relationship between gross output per manzana and farm size.

The following model is estimated for gross output per manzana of farm area:

$$GO/FA = a + b \log AFA$$

Where GO = gross output, FA = farm area, and AFA = total farm area for all farms in a given farm size interval divided by the total number of farms in that interval. The

[42] The production of sugar cane is assumed to be 50 tons per hectare, which was converted into cwt per manzana. This assumption is based on the observation by Higbee that the average annual yields of sugar cane in the Lower Pacific Piedmont region was between 30 and 70 tons to a hectare. E.C. Higbee, "The Agricultural Regions of Guatemala," Geographical Review, Vol. 37, No. 2 (Apr., 1947) 198.

logarithm is used in all model estimations because of the higher variation of the independent variable compared to the dependent variable.

For each of the six crops, the following model is estimated for value of yield per area harvested:

$$CO/AH = a + b \log AFA$$

Where CO = crop yield and AH = area harvested.

The results of the estimation for this model determine the relationship between individual crop yields and farm size.

Following the results of the productivity analysis, additional regressions are estimated and factor utilization ratios by farm size were analyzed. These establish possible rationale for the results of the relationships between crop yields and farm size.

Two regressions are performed to evaluate the relationship of land utilization and farm size. The following model is estimated:

$$LU/FA = a + b \log AFA$$

The model is estimated twice. In the first estimation, LU = land harvested, land where the harvest was lost and land used for coffee and fruit trees, and vineyards. The second estimation includes land in pasture as a share of land use.

In the final section, the relative factor utilizations of land and labour are analyzed. These ratios indicate the relative intensity in terms of labour use per farm area between small and large holdings. These ratios provide some explanation into the estimated relationship between crop yields and farm size. Agricultural labour by farm size is not provided in the Census of 1950. Therefore, to provide an analysis of the differences in factor utilization

by farm size, regional data provided in the Guatemalan Agricultural Census of 1930 is incorporated into this study. This census was carried out in the rural areas of six municipalities in the departments of Chiquimula and Izabal to determine the extent of agricultural activity in the border region with Honduras.[43] This census was completed two decades prior to the year of my study, however agricultural practices in this region did not change significantly over this time. Also, the census only covered a relatively small region of the country. Nevertheless this region had a high degree of variation in the size of farms and crops produced.

[43] Guatemala, Censo de 1930: Interéses Económicos y Comerciales de Guatemala en la Región Fronteriza con Honduras (1931) 3.

Chapter V: Results and Analysis

(i) Composition of Output

The values of production for the ten selected crops are obtained using the price estimates and the production levels provided in the Guatemalan Agriculture Census of 1950. Further deconstructing this production by department and farm size allows for analysis and insight into the structure of Guatemalan agriculture at this time. The construction of output by farm size will also allow for productivity analysis in the following section.

(a) National and Departmental

Table 2: National Composition of Production Value and Area Harvested[a]

(Source: Censo Agropecuario de 1950)

Crop	Value (US$)	% of Total	Area Harvested	% of Total
Coffee	22,345,017	35.4	181,527	14.7
Wheat	2,651,104	4.2	44,174	3.6
Bananas	3,092,954	4.9	24,251	2.0
Black Beans	3,597,926	5.7	106,321	8.6
Corn	22,849,989	36.2	786,748	63.6
Rice	568,094	0.9	11,171	0.9
Tobacco	2,083,010	3.3	2,397	0.2
Broad Beans	568,094	0.9	28,545	2.3
Millet	631,215	1.0	29,164	2.4
Sugar Cane	4,797,235	7.6	22,096	1.8
Total Value	**63,121,516**	**100.0**	**1,236,394**	**100.0**

[a] See Appendix C for Departmental Composition of Production Value and Total Farm Area

Table 2 shows the values of the ten selected crops. Corn was the most valuable in terms of production (36.4% of production value) and it was the most important crop in terms of land use (63.6% of harvested area). The second most important crop in terms of value and harvested area was coffee. Coffee accounted for 35% of the production value and 14.7% of harvested area. Sugar cane and bananas were also significant, 7.6% and 4.9% of the total value respectively. As with coffee, both of these had a higher value to harvested area than other crops. Black beans were the second most significant subsistence crop next to corn. However, they had a lower value to area harvested.

Table 3: Contribution to Crop Production by Department (%)[a]

(Source: Censo Agropecuario de 1950)

Department	Coffee	Bananas	Corn	Black Beans	Wheat	Millet	Broad Beans	Rice	Tobacco	Sugar Cane
Guatemala	4.1	0.2	3.7	5.2	0.0	2.6	0.5	0.1	13.9	2.3
El Progreso	0.0	0.5	0.7	0.9	0.0	0.1	0.0	0.0	5.8	2.5
Sacatepéquez	1.9	0.0	1.3	2.0	0.0	0.0	0.1	0.0	0.0	0.7
Chimaltenango	8.4	0.0	15.1	4.6	9.6	0.1	5.8	0.2	0.4	3.0
Escuintla	6.5	62.1	4.6	1.5	0.0	0.0	0.7	0.3	0.1	35.5
Santa Rosa	10.0	0.3	3.8	9.1	0.1	3.4	0.2	24.8	2.7	9.7
Sololá	1.1	0.0	1.8	2.0	6.5	0.0	5.9	0.1	0.2	0.8
Totonicapán	0.0	0.0	1.5	1.1	12.5	0.0	22.0	0.0	0.4	0.0
Quezaltenango	15.0	0.8	6.1	1.7	28.3	0.0	36.8	3.1	2.0	3.6
Suchitepéquez	15.9	9.7	3.4	0.5	0.0	0.0	0.2	13.1	0.0	10.6
Retalhuleu	5.1	2.6	5.2	0.4	0.0	0.0	0.1	7.1	0.2	4.7
San Marcos	20.8	1.6	7.2	5.1	27.6	0.0	18.8	3.4	2.5	2.5
Huehuetenango	0.8	0.2	9.0	5.3	13.4	0.0	4.1	0.2	2.5	3.5
El Quiché	1.0	0.0	6.9	6.3	1.5	1.8	2.4	0.1	2.0	3.2
Baja Verapaz	0.9	0.0	2.4	2.5	0.0	8.5	0.0	0.3	0.0	3.3
Alta Verapaz	7.1	0.1	9.5	7.8	0.0	0.0	0.5	0.7	0.2	2.1
El Petén	0.0	0.1	1.0	1.1	0.0	0.0	0.0	0.1	0.0	0.4
Izabal	0.1	18.6	2.8	3.7	0.0	0.0	0.4	0.5	0.5	0.0
Zacapa	0.7	0.2	2.1	4.0	0.0	0.5	0.1	1.1	7.2	3.8
Chiquimula	0.1	1.6	3.7	9.9	0.0	13.5	0.4	3.3	22.9	3.4
Jalapa	0.0	0.3	3.1	5.8	0.4	1.5	0.4	3.4	10.5	1.8
Jutiapa	0.3	0.9	5.2	19.6	0.0	67.8	0.4	38.2	26.0	2.6
Total	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**

[a] See Appendix C for Contribution to Production by Crop for Departments

As this table shows, there was a clear differentiation between crops with a high and low value to harvest area. The crops for export and the commercially produced crops, such as coffee, sugar cane, and bananas, all had higher values to harvested area, while the subsistence crops such as corn and beans, had lower values to harvest area.

From Table 3 it can be seen that these high value crops were for the most part concentrated in a few departments. Four departments produced over 60% of all coffee production and the majority of the remainder was produced in only five other departments. The main coffee producing departments were San Marcos (20.8%), Suchitepéquez (15.9%), Quezaltenango (15.0%), and Santa Rosa (10.0%). Each of these departments include areas of the region know as the Upper Pacific Piedmont which extends along the Pacific coast from the borders with Mexico and El Salvador. This region is highly conducive for the growing of coffee because of its high soil quality and regular rainfall.[44] The concentration was even more extreme for bananas, the other main export crop. Only three departments, Escuintla, Suchitepéquez, and Izabal harvested over 90% of all bananas, and two-thirds of these bananas were produced in the department of Escuintla alone. These departments are situated on the coastal plains of the Pacific and Caribbean, which are hot and humid, and ideal for growing bananas. However, production is supplemented by complex irrigation systems during the dry season.[45]

Similarly, the production of commercial crops was concentrated geographically. The majority of the sugar cane harvest occurred in the Lower Pacific Piedmont Region. The departments of Escuintla, Suchitepéquez, Retalhuleu, and Santa Rosa, which all have lands in this region, combined to produce over 60% of the harvest. The harvest of tobacco was concentrated in the departments of Guatemala, Chiquimula, Jalapa, Jutiapa and Zacapa, which all accounted for over 80% of production. Most of this tobacco was low-grade and manufactured into cigarettes for national markets.[46]

---

[44] Higbee 194.
[45] Ibid. 200-1.

In contrast, the subsistence crops were produced in all the departments and with no concentration in any particular geographical region. Corn was produced in every department and there was an even distribution of production, apart from Chimaltenango and Alta Verapaz, which produced 15.1% and 9.0% respectively. This generally reflects the importance of corn as a source of nutrition for the population regardless of regional distinctions. Consequently, corn was planted wherever it would grow, whether it was on mountainsides or depleted soils.[47] Additionally black beans, which were often interplanted with corn, were produced in every department and with no particular concentration in any single department with the exception of Jutiapa (19.6%).[48]

The production of wheat, which was usually produced by the subsistence sector and then sold, was rather concentrated due to soil and climatic conditions. Most of the harvest occurred in the Western Highland region where the four departments of Quezaltenango, San Marcos, Huehuetenango, and Totonicapán harvested over 80% of all the wheat produced. Finally, the production of rice was concentrated in the departments of Santa Rosa and Jutiapa. These two departments together accounted for 63% of all rice production in the country. It has been estimated that a substantial portion of this rice production moved each year from Guatemala to Honduras and El Salvador, however much of it returned to Guatemala when prices were higher.[49]

It has been demonstrated that the production of high value crops, those primarily produced commercially, were concentrated regionally within Guatemala. To determine the duality of the structure of agriculture, the analysis must proceed to examine the composition of the value of output among farm sizes. Verifying whether small or large landholdings produced commercial or subsistence crops will assist in revealing how each contributed to the value of agricultural production.

---

[46] Whetten, 143.
[47] Ibid. 138-9.
[48] Fletcher et al. 57.
[49] Ibid. 145-6.

(b) Farm Size

From Table 4 some clear patterns emerge between the production of various farm sizes. As would be expected, all crops that are considered part of subsistence farming were predominately produced by smallholders. Over 75% of all corn production in the country was produced by farms with less than 32 manzanas. The other subsistence crops were more proportionately skewed to smaller farms. Over 90% of all the production of black beans, wheat, millet, and broad beans were harvested by farms with less than 32 manzanas. In the case of broad beans, over 95% of all the harvest was done by farms with less than 32 manzanas. Like wheat, rice was a crop that was predominately harvested by smallholders and then sold in domestic markets. Farms with 32 manzanas or less harvested approximately 75% of rice production.

However, the commercial crops were predominately produced by farms ranging from 32 manzanas and greater with the exception of tobacco. Over 60% of all tobacco production was done by farms with less than 32 manzanas. It is difficult to determine why this was the case since the production of tobacco by farm size at the department level was not included in the census. However, the greater part of tobacco production was in eastern Guatemala where there were few large landholdings, and where they existed, the agricultural focus was mostly dedicated to the raising of livestock. Also, there was relatively lower population pressure in this region than others. This had created an environment where subsistence farms could own farms large enough to provide a livelihood and diversify into other crops as well.[50]

[50] Higbee 188.

Table 4: Contribution to National Crop Production by Farm Size (%)[a]

(Source: Censo Agropecuario de 1950)

Farm Size	Coffee	Bananas	Corn	Black Beans	Wheat	Millet	Broad Beans	Rice	Tobacco	Sugar Cane
Less than 2 manzanas	0.0	0.0	25.0	18.9	17.4	21.2	38.1	19.4	4.7	0.0
2 to less than 5	0.1	1.8	26.0	31.4	27.3	35.5	28.2	27.2	23.3	3.9
5 to less than 10	0.3	2.0	14.9	17.3	24.1	16.1	16.9	15.0	15.8	5.3
10 to less than 32	2.3	2.1	12.5	14.2	21.1	15.7	11.5	13.6	16.7	8.8
32 manzanas to less than 10 caballerías	47.0	6.3	11.7	13.1	9.7	10.7	5.0	18.0	30.6	33.1
10 to less than 20	17.5	10.8	2.3	1.5	0.2	0.4	0.1	2.3	7.4	12.6
20 to less than 50	17.9	4.0	4.1	2.5	0.3	0.3	0.1	0.7	1.2	12.8
50 to less than 100	9.5	0.4	1.5	0.4	0.1	0.0	0.0	0.2	0.2	15.7
100 to less than 200	3.9	0.0	1.5	0.5	0.0	0.0	0.0	0.0	0.0	7.8
200 caballerías and greater	1.5	72.7	0.4	0.1	0.0	0.0	0.0	3.5	0.0	0.0
Total	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**

[a] See Appendix C for Contribution to Departmental Crop Production by Farm Size

Nevertheless, farms of greater than one caballería harvested the other commercial crops. Farms of greater than one caballería produced over 90% of coffee. However, farms that ranged in the size between 1 and 10 caballerías produced almost 45% of all coffee alone. This was because over 50% of the coffee farms were of this size and they controlled 45.6% of all the area planted in coffee. This contrasts with the distribution of coffee farms. Almost 30% of coffee farms that grew coffee were smaller than 64 manzanas but they accounted for only 5% of the production since they controlled only 4.5% of the area planted in coffee.

The largest banana plantations accounted for almost the entire production of the crop. Over 70% of this crop was produced by four plantations, which accounted for 67.4% of all banana land. The United Fruit Company owned and operated two of these plantations. One was located at Bananera in the department of Izabal and the other at Tiquisate in the department of Escuintla.[51] However, the majority of farms that recorded banana production were smallholders. Although only 6% of all banana land was operated by smallholders with less than 64 manzanas, almost 90% of all farms that produced bananas were below this size.[52] Some of these banana producers, especially in the proximity to the plantations, were under contract with the United Fruit Company. This was seen by the company as a means of reducing financial risk in the event of a natural disaster, such as hurricanes, which are common in the region. This also reduced losses caused by banana diseases, such as Sigatoka, which for decades had been a threat to banana harvests.

[51] Whetten 130.
[52] See Appendix C, Table A6: National Crop Distribution by Farm Size

Table 5: National Composition of Output by Farm Size (%)[a]

(Source: Censo Agropecuario de 1950)

Farm Size	Coffee	Wheat	Bananas	Black Beans	Corn	Rice	Tobacco	Broad Beans	Millet	Sugar Cane	Total
Less than 2 manzanas	0	6.2	0.0	9.3	77.0	1.4	1.3	3.0	1.8	0.0	**100.0**
2 to less than 5	0.1	7.9	0.6	12.5	65.5	1.6	5.3	1.8	2.5	2.0	**100.0**
5 to less than 10	1.3	11.2	1.1	11.1	60.1	1.4	5.8	1.7	1.8	4.4	**100.0**
10 to less than 32	9.4	10.0	1.2	9.3	51.8	1.3	6.3	1.2	1.8	7.6	**100.0**
32 manzanas to less than 10 caballerías	63.6	1.5	1.2	2.9	16.3	0.6	3.9	0.2	0.4	9.5	**100.0**
10 to less than 20	70	0.1	6.0	1.0	9.2	0.2	2.8	0.0	0.0	10.8	**100.0**
20 to less than 50	69	0.1	2.1	1.6	16.2	0.1	0.4	0.0	0.0	10.5	**100.0**
50 to less than 100	65.3	0.1	0.3	0.5	10.7	0.0	0.1	0.0	0.0	23.0	**100.0**
100 to less than 200	54.4	0.0	0.0	1.2	21.2	0.0	0.0	0.0	0.0	23.3	**100.0**
200 caballerías and greater	12.2	0.0	83.5	0.1	3.5	0.7	0.0	0.0	0.0	0.0	**100.0**

[a] See Appendix C for Departmental Composition of Output by Farm Size

Farm sizes of greater than 32 manzanas produced over 80% of all sugar cane in the country. Two types of sugar were produced in Guatemala at this time. Refined sugar was largely produced on the Pacific, which, as mentioned earlier, was the primary area of sugar cane production. This production was primarily by highly mechanized plantations, which would refine the cane in their own mills, and buy cane produced by the surrounding smaller farms for refining. Sugar cane is considered a crop that requires a specialized system of farming, substantial capital investment and technical expertise. Therefore, the production depends on the plantation facilities, government agencies or cooperatives.[53] The other sugar produced was a lower grade brown sugar called Panela was produced on individual plots wherever in the country it to grow.[54] The production of Panela and the farms that sold their harvest to refineries could account for the sugar cane produced by the smaller farm holdings.

As one would expect from the results of the previous analysis, a greater proportion of the output of the smaller land holdings was from subsistence crops and the output of the large holdings was focused on commercial crops. Table 5 reveals the dependence of smallholdings on the production of corn, black beans and wheat. Although corn is an important source of output regardless of farm size, it is substantially more so for farms smaller than 32 manzanas. Conversely, farms larger than 32 manzanas focused their production on high value crops therefore a majority of their output was composed of these commercial crops. The majority of the production of subsistence crops by the larger farm sizes was due to the harvesting of food crops for their resident workers.

The inequality in the value of output between the large and small farm sector can be directly correlated to the composition of output discussed previously. As exhibited in Table 6, the small farm sector produced a significant proportion of the value of production, but because this sector represents far more of the farms in the country, the average output per farm in this sector is much smaller than the large farm sector. Farms of less than 32 manzanas produced over 45% of the value of these crops with less than

[53] Bachman and Christmas 250.
[54] Whetten 135-6.

30% of the total farmland. However, these farms represented approximately 95% of the number farms in the country. Therefore, their average output was insignificant compared to the large holdings, which produced over 50% of the value of production but comprised less than 5% of all farms.

Table 6: Total Value and Average Production by Farm Size
(Source: Censo Agropecuario de 1950)

Farm Size	Value (US$)	% of Total	Average
Less than 2 manzanas	7,418,978	11.3	86
2 to less than 5	8,157,665	12.4	91
5 to less than 10	9,080,230	13.8	133
10 to less than 32	5,661,798	8.6	205
32 manzanas to less than 10 caballerías	16,518,719	25.1	2,569
10 to less than 20	5,591,727	8.5	9,827
20 to less than 50	5,791,848	8.8	16,178
50 to less than 100	3,259,059	5.0	31,337
100 to less than 200	1,591,197	2.4	49,725
200 caballerías and greater	2,681,681	4.1	121,895
Total	**65,752,901**	**100.0**	**181**

The farm size interval of 32 manzanas to 10 caballerías is of interest because its value of production was considerably greater than any other farm size. The value represented 25% of all production although there were only 3.6% of all farms in this interval. Granted this interval represented over 25% of all farm area and it would be expected to produce a considerable portion of output. However, the farm area in this interval is only twice as large as the area farmed by units greater than 200 caballerías or units between 20 and 50 caballerías. The difference can be largely explained by the fact that 44.0% of all coffee in the country was produced by farms between 1 and 10 caballerías, which was much greater than any other size of farm.

In summary, as a result of constructing the composition of output by department and farms size in 1950, there is a clear indication of a dual agricultural system. A majority of smaller farms produced subsistence crops, which generally had a lower value to land ratio. A minority of larger farms produced commercially for foreign or domestic markets. In general, the departments with the highest value of production possessed the

majority of larger plantations.[55] These were geographically located in areas that were most fertile and productive for these crops. Specifically, coffee, bananas, and sugar were primarily produced on the slopes of the Pacific mountain range by farms of greater than a caballería. In contrast, the departments with lower values of production generally relied on subsistence crops as a source of output and these departments were geographically concentrated in the highland regions of the country. However, these smaller land holdings, whether in the highland regions or located in regions of plantation agriculture, produced a substantial level of output given the relative size of their units. In the following section, the issue of land productivity will be analyzed to provide insight into the productivities of the small and large units of land.

[55] See Appendix C, Table A3: Value of the Ten Selected Crops and Farm Area by Department.

(ii) Land Productivity and Resource Utilization

In the previous section, it was showed that smaller farms accounted for a majority of the output in Guatemala. However, as a result of the substantial land inequality that existed, these smallholdings represented the majority of the farms in the country and they operated a small proportion of the available agricultural land. The following section will evaluate the results of the regression analysis performed on output levels of aggregated crop values and individual crop yields to determine whether these smaller units were more productive in their use of land. Following this analysis, the land and labour use of these farm sizes will be scrutinized to provide insight into to the reasons for the relationships found in the productivity analysis.

(a) Land Productivity

Table 7 shows gross output per farm area and yields per area harvested for the selected crops by farm size. Regarding output per manzana, there was a clear trend of declining output as farm size increased, excluding the smallest size interval of less than two manzanas. Only a few crops showed an apparent decreasing output per harvested area as farm size increased. The output per harvested area of both exports, coffee and bananas, tended to decline as farm size rose (apart from the largest farm size of 200 caballerías and greater, which was mentioned previously as being comprised of four large plantations that produced the majority of the bananas on the majority of the banana land in the country). Many crops that were produced by smallholders did not show a noticeable decline in yields. Maybe surprisingly, black beans and corn, the two primary crops of subsistence agriculture showed no noticeable relationship between yield and farm size. Tobacco, broad beans, and millet, which were crops that were primarily produced by smaller farm sizes, also did not show a noticeable relationship.

Table 7: Output per Manzana by Crop and Farm Size[a]

(Source: Censo Agropecuario de 1950)

Farm Size	Gross Ouptut	Coffee	Wheat	Bananas	Black Beans	Corn	Rice	Tobacco	Broad Beans	Millet
Less than 2 manzanas	12.9	0.0	65.9	0.0	41.9	34.2	58.7	964.7	31.4	27.5
2 to less than 5	30.0	279.8	60.1	175.5	34.0	27.3	50.9	967.6	18.9	21.8
5 to less than 10	20.0	184.1	57.7	147.8	28.3	25.8	49.1	863.8	15.2	21.3
10 to less than 32	12.4	150.6	56.2	130.7	29.1	25.3	41.5	796.8	15.5	20.9
32 manzanas to less than 10 caballerías	11.5	120.4	59.3	60.0	34.9	25.2	40.2	861.6	16.7	18.4
10 to less than 20	11.1	117.6	47.9	165.6	37.1	34.5	57.5	1036.4	17.7	29.1
20 to less than 50	8.2	130.5	78.2	95.9	113.2	51.7	55.8	345.9	20.1	3.9
50 to less than 100	7.0	128.4	46.8	65.0	58.4	34.8	24.3	408.5	43.4	33.4
100 to less than 200	5.7	146.1	0.0	24.5	70.0	115.3	46.5	0.0	0.0	25.0
200 caballerías and greater	3.8	80.7	0.0	137.0	20.6	24.8	53.9	0.0	0.0	0.0
Average	**11.0**	**123.0**	**59.5**	**127.0**	**34.1**	**29.0**	**48.2**	**869.9**	**20.5**	**21.8**

[a] Due to insufficient data, sugar cane production was assumed constant across all farm sizes. Therefore, the crop is excluded from the land productivity analysis

To examine land productivity more systematically, regression analysis was performed on total output and six of the ten selected crops. The results of this analysis are reported in Table 8. The most important finding was that the coefficient of the dependent variable was only positive and statistically significant for a single crop. Therefore, gross output and the crop yields were either negatively related to farm size or no relation was found.

Table 8: Regression Results, Land Productivity by Farm Size
(Standard errors in parenthesis)

	Constant	Log. Of Farm area	R2 adjusted	Number of Obs.
Output				
Gross Output	36.14 (1.70)	-9.01*** (0.76)	0.38	229
Crop				
Coffee	221.19 (13.59)	-29.73*** (5.461)	0.20	118
Bananas	153.03 (12.47)	-14.57** (6.03)	0.04	125
Corn	414.91 (79.69)	-144.09*** (37.31)	0.06	220
Black Beans	42.89 (4.72)	4.72* (2.41)	0.01	204
Wheat	63.96 (5.64)	-3.01 (4.12)	-0.01	91
Rice	42.61 (2.80)	-1.33 (1.56)	0.00	161

*** coefficient significant at 99% confidence level
** coefficient significant at 98% confidence level
* coefficient significant at 90% confidence level
Note: The dependent variable in the regression examining gross output is total output divided by total farm area. The dependent variable in the regression examining individual crops is the value of the crop output divided by the harvested area for that given crop. The independent variable in each regression is the average farm size in a given farm size group for its respective department.

Inverse and statistically significant relationships are visible for gross output, coffee, bananas, and corn. This implies an inverse relationship between farm size and land productivity for total output and for these three crops. The relationships between the yields of coffee and corn, and farm size are the most noteworthy considering they were the most important crops in terms of land use and value. Therefore, the redistribution of the lands used to produce these crops would have had the most significant impact on

national output. In addition, the negative relationship found between land productivity of coffee and banana farms is of interest given the nature of production of these two crops.

It has already been determined that the majority of coffee was produced on farms greater than one caballería. However, a significant number of smaller farms produced coffee. These results contradict intuition since these smaller farms were more productive in their use of land even though the majority of the best coffee lands were operated by plantations. Whetten points to several factors that made these plantations inefficient. The existence of absentee management, insufficient capital investment, low labour productivity, inefficient management of nationally owned plantations, and a lack of incentive to implement new methods of production because of the access to cheap land and labour.[56] In comparison, these factors would not have existed for the smallholders since they would have been responsible for their own plots of land, and would have had the incentive to maximize labour and land productivity. Unlike the plantations, which relied on *colonos* and migratory labour, the small-scale farmer would have generally relied on family members for labour.

The majority of banana production was on plantations owned by the United Fruit Company. These plantations were often associated with efficient and modern techniques of production.[57] The banana plantations in Guatemala at the time needed overhead irrigation to allow for production year round in areas such as the Pacific Coast where rainfall is often low and there is a long dry season.[58] Production of bananas also required the central pumping units to spray the harvest to prevent against diseases such as Sigatoka and Panama disease.[59] Regardless, the results of the analysis seem to contradict the need for high capital investment and it may imply the underutilization of land on these plantations or low labour use intensity.

---

[56] Whetten 127-8.
[57] Ibid. 130.
[58] Higbee 200-1.
[59] Whetten 130.

However, it is important to acknowledge in the case of bananas and coffee that these results are in regards to land productivity and other factors, such as marketing or preparation for market for an export crop can be difficult for small producers. This is difficult to determine in the case of bananas because United Fruit had virtual monopoly control of production, transportation and marketing.[60] Also in the case of coffee, the smallholders sold their product either directly to exporters or to the large landholders who dealt with the storage, transportation, and marketing.[61] Since the smallholders were more productive, the removal of these monopolistic controls and the provision of technical assistance could have allowed for successful operations.

Both black beans and corn showed statistically significant relationships between yield and farm size. The production of corn exhibited both a negative and significant relationship between yield and farm size. The relationship between the yield of black beans and farm size was positive and statistically significant. Corn was the most significant crop in Guatemala in terms of land use and production value, and it constituted a substantial portion of production by all farm sizes. However, smallholdings devoted a greater proportion of land to corn and a larger percentage of their output was comprised of corn. Black beans were the second most important crop for subsistence farmers. A possible explanation for smaller farms to not have produced beans more productively could have been a consequence of the practice of interplanting corn and beans, which is a common practice among small holders. In Guatemala, Fletcher found yields to be lower in 1964 for corn that was interplanted than corn that was not. He also found yields to lower on the smaller farms compared to larger farms because of the lack of fertilizer, poor soil, and insufficient crop rotation and pest control. However, he found smaller farms to have higher yields than medium sized farms primarily due to the higher labour inputs.[62] With similar reasoning, the interplanting of beans may have reduced the yields of beans for farms of smaller size. However, these results contradict Fletcher's findings concerning lower corn yields of smaller farms.

---

[60] Whetten 133.
[61] Keith Griffen, "Reform and Diversification in a Coffee Economy: The Case of Guatemala," in Land Concentration and Rural Poverty (London: The Macmillan Press Ltd., 1976) 161.
[62] Fletcher et al. 78.

The results of rice and wheat were both statistically insignificant. Smaller farms primarily produced wheat and rice, and often they were sold commercially in domestic markets. However, it is difficult to justify the relationships between farm size and the production of wheat and rice because the lack of information regarding the production of these crops in Guatemala. Regardless, the results signify that there was not a substantial relationship between the yields of these crops and farm size.

The result of the previous analysis generally supports the hypothesis that small landholders in Guatemala generally had a higher land productivity compared to large landholders. With the exception of a single crop, the regression results estimated a negative or insignificant relationship between both total output and crop yield, and farm size. Therefore, gains in output per farm area and area harvested would have been expected by the redistribution of agricultural land.

(b) Land and Labour Utilization

The previous analysis confirmed greater land productivity by small landholdings. The difference in productivity levels could have been a result of the tenure arrangements, labour productivity, or the differences in input use. The study will continue with an examination of the differences between the use and intensity of inputs by farm size. More specifically, the relative utilization of available farmland and the intensity of labour inputs between farm sizes.

Table 9: National Land Utilization by Farm Size (%)
(Source: Censo Agropecuario de 1950)

Farm Size	Total Area	Utilized	Not Utilized	Unusable
Less than 2 manzanas	100.0	94.6	0.0	5.4
2 to less than 5	100.0	81.6	13.7	4.7
5 to less than 10	100.0	59.5	32.9	7.6
10 to less than 32	100.0	36.6	54.2	9.2
32 manzanas to less than 10 caballerías	100.0	25.9	66.6	7.5
10 to less than 20	100.0	27.6	63.8	8.7
20 to less than 50	100.0	21.4	68.3	10.3
50 to less than 100	100.0	18.5	71.6	9.9
100 to less than 200	100.0	15.3	73.7	11.0
200 caballerías and greater	100.0	5.7	82.5	11.8
Average	**100.0**	**29.7**	**61.5**	**8.9**

Note: Utilized: harvested area, lost harvest area, and coffee trees, orchards, and vineyards
Not Utilized: area in rest, natural pasture, and mountains, forest, and brush
Unusable: Not defined in the Census

Table 9 depicts a clear relationship between farm size and the utilization of land. The level of land utilized in production declines as farm size increases. Alternatively, land not utilized increases as farm size increases. It is also intriguing that the level of land deemed unusable rises as farm size rises. This implies that the operators of smaller farms may consider marginal land cultivatable that operators of larger farms considered unusable.

Table 10: Regression Results, Land Utilization by Farm Size
(Standard errors in parenthesis)

	Constant	Log. of farm area	R2 adjusted	Number of Obs.
Without Pasture	0.84 (0.02)	-0.21* (0.01)	0.76	229
With Pasture	0.87 (0.02)	-0.16* (0.01)	0.7	229

* significant at a 99% confidence level
Note: Estimation of *without pasture* included; harvested area, lost harvest area, and areas allocated for coffee trees, orchards, and vineyards. Estimation *with pasture* included the areas in the first regression, *without pasture*, and area in pasture.

Table 10 displays the results of two regressions that were performed to evaluate land utilization more rigorously. The first regression, which excluded land in pasture,

estimated a negative relationship between farm size and land utilized for productive purposes. This implies that farms of larger sizes used a smaller proportion of their total farm area for productive purposes. It is important to point out that the land use variable does not take into account double cropping, which was common in the production of corn in Guatemala. Therefore, the estimation treats all land that was harvested equally.

The second regression included land in pasture as a component of land use. This was performed because of the recognized extensive use of land for the raising of livestock as farm size rises in land-abundant countries, such as the countries of Latin America. This represents a shift away from land cultivated for the purpose of growing crops to land in pasture.[63] Regardless, the addition of land in pasture did not significantly change the results. A negative relationship was found between the proportion of land utilized to total farm area and farm size. The unimportance of land in pasture in the results could be due to the relative unimportance of the raising of livestock in Guatemala at the time, and the geographic concentration of the livestock production that did exist. Only a small number of larger farms produced beef cattle, and they were concentrated along the Pacific coastal plain and the Eastern lowlands. In 1950, approximately 60 percent of all cattle were found on only 7 percent of cattle raising farms and one slaughterhouse in Escuintla slaughtered one-fourth of all the cattle in the country.[64]

The results of both of the previous regressions imply the lower intensity of land use by larger farms relative to smaller farms. In Guatemala, there were several factors that led to the underutilization of available land by larger farms. There was a lack of incentive for large landholders to bring into production available land due to low land taxes.[65] The lack of incentive was accentuated further by the land market imperfections that existed at the time. The ability to secure land through government concessions and the ability to maintain control of land titles were extremely biased in Guatemala. The foreign fruit companies and the coffee *finqueros* had considerable political control over the access to

---

[63] Berry and Cline 34.
[64] Whetten 133-5.
[65] Ibid. 134.

land granted in government concessions. They were able to exert their interests through organizations that could influence legislation.[66] This influence also allowed for access to cheaper credit, lower tax rates, and monopoly controls in production, transportation and marketing.

The underutilization of land by larger holdings relative to smallholdings in Guatemala could have also been attributed to the ownership of land for purposes other than the operation for profitable production. The dual size structure that existed allowed landowners to obtain and hold land for prestige, speculation, and to hedge against inflation. On the Pacific coast, there were plantations that used modern machinery and techniques to produce crops such as, lemon grass and cotton. However, these farms only produced crops that had high profits on world markets, and when the prices declined the plantation switched to another crop or stopped operation. Therefore, these holdings sought to exploit short- term gains rather than develop sustainable production, and they often left tracts of land uncultivated for periods of time.[67] National farms were also prevalent in many areas of Guatemala. In 1950, the national government controlled about 120 plantations. The national farms were known for their inefficient production methods, including the underutilization of land.[68]

The underutilization of land by large farms in Guatemala may primarily have been attributed to the low opportunity cost of land for large landholders compared to the smallholders, and the holding of land for purposes other than for production. This underutilization of land can in part explain the negative relationship between farm size and output per farm area. However, in order to examine the relationship between farm size and yield per harvested area, there needs to be a further analysis of the relative factor utilization of land and labour between farm sizes.

---

[66] Ibid. 125.
[67] Ibid. 137.
[68] Ibid. 128.

The Agricultural Census of 1950 did not provide sufficient information on the use of labour by size of the operating unit. Therefore, in order to analyze the relative labour intensity of production, the Guatemalan Agricultural Census of 1930 was incorporated into the analysis. This survey was regionally based in the rural areas of Chiquimula and Izabal. In 1930, the agricultural practices and structure in this region were similar to those in 1950. In Izabal, the primary commercial crop was bananas. The United Fruit Company dominated the production of bananas, however even more so than in 1950. The other crops produced in the region were considered food crops, such as corn, beans, and rice. On the other hand, Chiquimula relied on the production of tobacco and the raising of livestock, in addition to food crops.

Table 11: Contribution to Output by Farm Size
(Source: Censo de 1930)

Farm Size	Bananas	Tobacco	Food	Livestock	Other
Smallest 25%	0.05	0.01	0.6	0.22	0.12
Medium-sized	0.28	0.09	0.45	0.06	0.12
Large	0.32	0.12	0.36	0.09	0.11
Largest 25%	0.23	0.11	0.31	0.15	0.2
Total	**100.00**	**100.00**	**100.00**	**100.00**	**100.00**

Note: (a) Land is in manzanas
(b) output is the value of crops and presumed 30% output stream from value of cows, pigs and poultry
(c) Corn, beans, rice were designated as food crops
(d) Crops labeled 'other' are not specified in the census

Table 11 shows the relative importance of various crops as a source of income by varying farm sizes. Similar to 1950, the majority of the output of bananas was produced by larger farms. However, tobacco was produced more by larger farms, which contradicts production in 1950 where the majority of tobacco was produced by small to medium sized farms. To some extent, the high proportion of food crops produced by the larger farms can be explained by the prevalence of plantation agriculture in the region. Many of these plantations needed to produce food crops for their residents and migratory labour.

Table 12: Labour to Capital Ratios by Farm Size
(Source: Censo de 1930)

Farm Size	L/K ratio (1)	L/K ratio (2)
Smallest 25%	5.81	0.62
Medium-sized	1.25	0.23
Large	0.55	0.11
Largest 25%	0.21	0.09

Note: (a) L/K (1) is residents per manzana of land
(b) L/K (2) is residents per dollar of capital (times ten)
(c) capital is the reported value of land and livestock (including horses)

Concerning factor use intensity, Table 12 shows farms of smaller size used labour more intensely than capital. This result holds for both formulations of the labour to capital ratios. The high use of labour was more pronounced for the smallest farms and then declined substantially as the size of farm increased. This negative relationship suggests that farms of different sizes faced different relative factor prices. Smaller farms had a higher opportunity cost of land and a lower cost of labour. Conversely, the larger farms faced a lower opportunity cost of land and a higher cost of labour. Although these results correspond to 1930, they provide insight into the application of labour by farm size in a specific region of Guatemala that for all intensive purposes had remained unchanged by 1950.

The results of this analysis of factor utilization by farm size provide insight into the causes of the higher land productivity of the smaller farms in terms of total farm area and for harvested areas. Larger farms were found to have used less of their available land for productive purposes and the land that was harvested was done so with less labour intensity. On the other hand, smaller farms incorporated a greater proportion of their available land into production and they farmed this land with greater labour intensity. The reasons for the varying uses of labour and land were a result of the different prices faced by the operators of varying farm sizes. Land was used extensively by large farms due to its relatively lower price to that of labour. Conversely, smaller farms operated their available land, the scarcest resource, more intensely with the cheaper labour resource.

Conclusion

In 1950, rural Guatemala was extremely unequal as a result of its dual agricultural system. This system was a consequence of the historical process of land concentration among large landholders who typically operated their farms or plantations through the use of migratory labour and resident workers. This labour supply was often made available to the large farms as a consequence of exploitive laws that forced the subsistence farmers from their own land. Government policy was also biased towards export producers and provided access to land and other resources at low cost. Therefore, the larger farms, which controlled the majority of the best agricultural land, produced primarily export and other commercial crops. On the other hand, the smaller farms primarily produced subsistence crops on marginal land.

As a consequence of this dualistic structure, the operators of the smallerholdings faced different relative factor prices of land and labour. Land was relatively more scarce for the operators of the small farmers, therefore their land had a higher opportunity cost than labour. Conversely, the large landholders had relatively cheaper access to land compared to labour. These divergent relative factor prices influenced the manner in which the farmers of different farm sizes operated their land. The operators of small farms used a higher proportion of their available land for productive purposes compared to the farms of larger sizes. Smaller farms also applied greater amounts of labour relative to their available land endowment compared to larger farms. Consequently, these smaller farms were able to achieve higher land productivity by producing greater output per unit of farm area and achieving higher or equivalent yields per unit of harvested area for a majority of the most significant crops in the country.

The results of this study signify that there would have been gains in national output as a consequence of a successfully implemented land reform program in Guatemala. Therefore, land redistribution would have increased the average incomes of the majority of the population in addition to reducing the land and income inequalities in the country. This increase in income as a result of greater output per agricultural worker would have

also been augmented by increased employment in the rural sector through the greater availability of agricultural land for the landless workers. The scope of this study did not include the effects of an agrarian reform program, specifically the reform of land tenure arrangements. If the nature of land tenure, such as ownership versus sharecropping, was found to positively affect the productivity of small operating units then there would be further gains from reform.

In conclusion, it should be noted that a land redistribution program is generally not politically feasible in most developing countries given the fact that they generally have poor governance and their politicians have economic and political interests that conflict with the process of redistribution. Therefore, if redistribution is not a viable policy option, the result of this analysis indicates that small farmers should be supported through improved access to technology and credit, and investment in infrastructure. These provisions diminish the market imperfections, which limit the small holders' ability to obtain capital. The productivity of operating units can change from a case-by-case basis, however if there is an indication of greater productivity by smaller farms, government policy should avoid a pro-large farm strategy.

Bibliography

Bachman, Kenneth L. and Raymond P. Christensen. "The Economics of Farm Size," in Agricultural Development and Economic Growth, Herman M. Southworth and Bruce F. Johnston, editors. Ithaca, N.Y: Cornell University Press, 1967, pp. 234-262.

Barraclough, Solon. Agrarian Structure in Latin America. Washington D.C.: Heath and Company, 1973

Berry, R.A. and W.R. Cline. Agrarian Structure and Productivity in Developing Countries. Baltimore, Maryland: The John Hopkins University Press, 1970

Byres, Terence J. "Introduction: Contextualizing and Interrogating the GKI Case for Redistributive Land Reform," Journal of Agrarian Change, Vol. 4, No. 1 and 2 (2004), pp.1-16.

_____. "Neo-Classical Neo-Populism 25 Years On: Déjà Vu and Déjà Passé. Towards a Critique," Journal of Agrarian Change, Vol. 4, No. 1 and 2 (2004), pp.17-44.

Comité Interamericano de Desarrollo Agrícola (CIDA). Tenencia de la Tierra y Desarrollo Socio-Económico del Sector Agrícola: Guatemala. Washington, D.C.: Union Panamericana, Secretaria General de la Organización de los Estados Americanos, 1965

Cornia, Giovanni Andrea. "Farm Size, Land Yields and Agriculture Production Function: An Analysis for Fifteen Developing Countries," World Development, Vol. 13, No. 4 (1985), pp. 513-534.

Dyer, Graham. "Redistributive Land Reform: No April Rose. The Poverty of Berry and Cline and GKI on the Inverse Relationship," Journal of Agrarian Change, Vol. 4, No. 1 and 2 (2004), pp.45-72.

Fletcher, Lehman B., Eric Graber, William C. Merrill and Erik Thorbecke. Guatemala's Economic Development: The Role of Agriculture. Ames, Iowa: Iowa State University Press, 1970

Griffen, Keith, Azizur Rahman Khan and Amy Ickowitz. "Poverty and the Distribution of Land," Journal of Agrarian Change, Vol. 2, No. 3 (2002), pp. 279-330.

Griffen, Keith. "Reform and Diversification in a Coffee Economy: The Case of Guatemala," in Land Concentration and Rural Poverty. London: The Macmillan Press Ltd., 1976, pp. 152-171

Guatemala, Ministerio de Económia, Dirección General de Estadística (DGE). Censo Agropecuario 1950. 3 vols. (1954).

_____. Censo Cafetalero1950 (1954)

_____. Censo de 1930: Interéses Económicos y Comerciales de Guatemala en la Región Fronteriza con Honduras (1931).

Handy, Jim. Revolution in the Countryside: Rural Conflict and Agrarian Reform in Guatemala. Chapel Hill: University of North Carolina Press, 1994

_____. Gift of the Devil: A History of Guatemala. Toronto: Between the Lines, 1984

Hayami, Yujiro and Vernon W. Ruttan. Agricultural Development: An International Perspective. Baltimore: Johns Hopkins University Press, 1985

Higbee, E.C. "The Agricultural Regions of Guatemala," Geographical Review, Vol. 37, No. 2 (Apr., 1947), pp.177-201.

Jones, Chester Lloyd. Guatemala: Past and Present. New York: Russell & Russell, 1966

Oxford University, Oxford Latin American Economic History Database (OxLAD), http://oxlad.qeh.ox.ac.uk

Raup, Philip M. "Land Reform and Agricultural Development," Agricultural Development and Economic Growth, Herman M. Southworth and Bruce F. Johnston, editors. Ithaca, N.Y: Cornell University Press, 1967, pp. 267-314.

Whetten, Nathan L. Guatemala: The Land and the People. New Haven: Yale University Press, 1961

Appendix A

Weights and Measures Used in this Study

	Measure	Equivalent
Units of Value	1 Quetzal	$1.00 U.S.
Units of Area	1 Caballería	64.00 Manzanas 45.10 Hectares
	1 Hectare	1.430 Manzanas 0.022 Caballerías 2.471 Acres
	1 Manzana	0.700 Hectares 1.730 Acres
Units of Weight	1 Metric Ton	1,000 Kilograms 22.05 Quintales
	1 Quintal	100 Pounds 45.37 Kilograms

Appendix B

Estimated Agricultural Crop Prices in Guatemala for 1950 (US Dollars)

1) Coffee (Cherries): 4.16 dollars/cwt

Methodology: The 1957 price for coffee cherries in Guatemala was 6.5 quetzales/cwt. (Tenencia de la Tierra y Desarrollo Socio-Económico del Sector Agrícola, Comité Interamericano de Desarrollo Agrícola (CIDA), Washington D.C.: Unión Panamericana, Secretaria General de la Organización de los Estados Americanos, 1965, p. 24) Projected this value back to 1950 by means of the Guatemalan Coffee Price Index (Oxford Latin American Economic History Database (OxLAD), http://oxlad.qeh.ox.ac.uk)

2) Bananas: 0.51 dollars/bunch

Methodology: The 1957 price for bananas in Guatemala was 0.56 quetzales/bunch (CIDA). Projected this value back to 1950 by means of the Guatemalan Banana Price Index (OxLAD).

3) Corn: 2.78 dollars/cwt

Methodology: The 1957 price for corn in Guatemala was 3.71 quetzales/cwt (CIDA). Projected this value back to 1950 by means of the Guatemalan Corn Price Index (OxLAD). A similar price of 2.67 dollars/cwt is obtained using the average value of Guatemalan annual corn production, in 1958 quetzales, from 1950-52. This average value was 22,104,200 quetzales (Fletcher, 43). This value was then divided by the number of units produced (hundredweights) in 1950 to arrive at an approximate 1950 price (Guatemalan Agricultural Census of 1950).

4) Black Beans: 2.78 dollars/cwt

Methodology: The 1957 price of beans is not available therefore; the price for 1950 is estimated as a proportion of the value of corn (see above). Sol Tax observed that beans varied consistently with corn by 160% over six years of observation in Guatemala City. This is probably because corn and beans are grown together, grown in the same season, and have similar cropping outcomes (Tax, 140). This observation is also consistent in 1957 when the price of beans was approximately 160% greater than the price of corn (CIDA).

5) Sugar Cane: 0.28 dollars/cwt

Methodology: The 1957 price for sugar cane in Guatemala was 0.49 quetzales/cwt (CIDA). Projected this value back to 1950 by means of the Guatemalan Sugar Price Index (OxLAD).

6) Rice: 3.10 dollars/cwt

Methodology: The 1957 price for rice in Guatemala was 4 quetzales/cwt (CIDA). Projected this value back to 1950 by means of the Guatemalan Rice Price Index (OxLAD). A similar price of 3.53 dollars/cwt is obtained by using the estimated average price of rice in Guatemala City for 1940, which was 2.89 dollars/cwt (Tax, Appendix 2) and Projecting this price to 1950 by means of the Guatemalan Rice Price Index (OxLAD).

7) Tobacco: 102.13 dollars/cwt

Methodology: The Guatemalan average value of annual tobacco production, in 1958 quetzales, from 1950-52 was 844,200 quetzales (Fletcher, 43). Divided this average production by the number of units produced (hundredweights) in 1950 (Guatemalan Agricultural Census of 1950) to obtain an approximate 1958 price of 41.35 quetzales/cwt. Projected this value back to 1950 by means of the Guatemalan Tobacco Price Index (OxLAD).

8) Wheat: 7.31 dollars/cwt

Methodology: The 1957 price for wheat in Guatemala was 6 quetzales/cwt (CIDA). Projected value back to 1950 by means of the Guatemalan Wheat Price Index (OxLAD).

9) Broad Beans: 2.78 dollars/cwt

Methodology: applied same price as black beans (see above).

10) Millet: 2.78 dollars/cwt

Methodology: applied same price as corn (see above).

Appendix C

Statistical Tables

Table A1: Farm Distribution by Department

(Source: Censo Agropecuario de 1950)

Farm Size	Republic	% of Dept.	Guatemala	% of Dept.	El Progreso	% of Dept.
Less than 1 manzana	74269	21.30	3761	20.49	536	9.54
1 to less than 2	91581	26.26	4945	26.95	1193	21.23
2 to less than 5	99779	28.62	5444	29.66	1828	32.53
5 to less than 10	42444	12.17	1876	10.22	962	17.12
10 to less than 32	26916	7.72	1352	7.37	581	10.34
32 to less than 64	6125	1.76	384	2.09	174	3.10
1 to less than 10 caballerías	6488	1.86	536	2.92	323	5.75
10 to less than 20	569	0.16	35	0.19	17	0.30
20 to less than 50	358	0.10	14	0.08	1	0.02
50 to less than 100	104	0.03	5	0.03	3	0.05
100 to less than 200	32	0.01	0	0.00	1	0.02
200 caballerías and greater	22	0.01	0	0.00	0	0.00
Total Farms	**348687**	**100.00**	**18352**	**100.00**	**5619**	**100.00**
% of Total			**5.26**		**1.61**	

Farm Size	Sacatepéquez	% of Dept.	Chimaltenango	% of Dept.	Escuintla	% of Dept.
Less than 1 manzana	1568	17.34	2470	13.68	5774	54.15
1 to less than 2	2654	29.35	4697	26.01	2150	20.17
2 to less than 5	3164	34.99	6494	35.96	1337	12.54
5 to less than 10	1112	12.30	2428	13.44	494	4.63
10 to less than 32	424	4.69	1414	7.83	305	2.86
32 to less than 64	58	0.64	275	1.52	138	1.29
1 to less than 10 caballerías	52	0.58	237	1.31	315	2.95
10 to less than 20	8	0.09	32	0.18	65	0.61
20 to less than 50	2	0.02	11	0.06	50	0.47
50 to less than 100	0	0.00	1	0.01	25	0.23
100 to less than 200	0	0.00	0	0.00	5	0.05
200 caballerías and greater	0	0.00	0	0.00	4	0.04
Total Farms	**9042**	**100.00**	**18059**	**100.00**	**10662**	**100.00**
% of Total	**2.59**		**5.18**		**3.06**	

Farm Size	Santa Rosa	% of Dept.	Solola	% of Dept.	Totonicapán	% of Dept.
Less than 1 manzana	1711	11.15	3280	24.19	9566	54.29
1 to less than 2	5616	36.60	4294	31.66	4805	27.27
2 to less than 5	4197	27.35	4108	30.29	2314	13.13
5 to less than 10	1409	9.18	1298	9.57	697	3.96
10 to less than 32	1264	8.24	494	3.64	207	1.17
32 to less than 64	438	2.85	34	0.25	21	0.12
1 to less than 10 caballerías	614	4.00	46	0.34	10	0.06
10 to less than 20	52	0.34	5	0.04	0	0.00
20 to less than 50	34	0.22	2	0.01	0	0.00
50 to less than 100	5	0.03	0	0.00	0	0.00
100 to less than 200	5	0.03	0	0.00	0	0.00
200 caballerías and greater	1	0.01	0	0.00	0	0.00
Total Farms	**15346**	**100.00**	**13561**	**100.00**	**17620**	**100.00**
% of Total	**4.40**		**3.89**		**5.05**	

Farm Size	Quezaltenango	% of Dept.	Suchitepéquez	% of Dept.	Retalhuleu	% of Dept.
Less than 1 manzana	7350	36.22	7263	57.03	4134	46.23
1 to less than 2	5296	26.10	2799	21.98	2575	28.79
2 to less than 5	4240	20.89	1416	11.12	1292	14.45
5 to less than 10	1846	9.10	419	3.29	413	4.62
10 to less than 32	1080	5.32	294	2.31	269	3.01
32 to less than 64	174	0.86	115	0.90	66	0.74
1 to less than 10 caballerías	258	1.27	334	2.62	137	1.53
10 to less than 20	25	0.12	60	0.47	23	0.26
20 to less than 50	17	0.08	28	0.22	23	0.26
50 to less than 100	6	0.03	4	0.03	7	0.08
100 to less than 200	0	0.00	2	0.02	3	0.03
200 caballerías and greater	0	0.00	1	0.01	1	0.01
Total Farms	**20292**	**100.00**	**12735**	**100.00**	**8943**	**100.00**
% of Total	**5.82**		**3.65**		**2.56**	

Farm Size	San Marcos	% of Dept.	Huehuetenango	% of Dept.	El Quiché	% of Dept.
Less than 1 manzana	9082	26.51	4580	14.30	3860	14.58
1 to less than 2	6311	18.42	8982	28.05	6618	25.00
2 to less than 5	7806	22.78	9934	31.02	8349	31.54
5 to less than 10	6165	17.99	4668	14.58	3845	14.53
10 to less than 32	3973	11.60	2714	8.47	2729	10.31
32 to less than 64	472	1.38	559	1.75	675	2.55
1 to less than 10 caballerías	404	1.18	529	1.65	342	1.29
10 to less than 20	34	0.10	28	0.09	22	0.08
20 to less than 50	11	0.03	25	0.08	20	0.08
50 to less than 100	1	0.00	6	0.02	9	0.03
100 to less than 200	1	0.00	2	0.01	0	0.00
200 caballerías and greater	1	0.00	0	0.00	0	0.00
Total Farms	**34261**	**100.00**	**32027**	**100.00**	**26469**	**100.00**
% of Total	**9.83**		**9.19**		**7.59**	

Farm Size	Baja Verapaz	% of Dept.	Alta Verapaz	% of Dept.	El Petén	% of Dept.
Less than 1 manzana	998	8.48	2856	10.00	251	11.38
1 to less than 2	2633	22.37	8798	30.79	293	13.28
2 to less than 5	4130	35.09	9422	32.98	817	37.04
5 to less than 10	1677	14.25	4314	15.10	556	25.20
10 to less than 32	1459	12.39	2441	8.54	233	10.56
32 to less than 64	461	3.92	329	1.15	30	1.36
1 to less than 10 caballerías	373	3.17	267	0.93	21	0.95
10 to less than 20	13	0.11	58	0.20	4	0.18
20 to less than 50	20	0.17	53	0.19	1	0.05
50 to less than 100	7	0.06	16	0.06	0	0.00
100 to less than 200	0	0.00	8	0.03	0	0.00
200 caballerías and greater	0	0.00	9	0.03	0	0.00
Total Farms	**11771**	**100.00**	**28571**	**100.00**	**2206**	**100.00**
% of Total	**3.38**		**8.19**		**6.30**	

Farm Size	Izabal	% of Dept.	Zacapa	% of Dept.	Chiquimula	% of Dept.
Less than 1 manzana	1048	19.40	459	7.35	1363	8.30
1 to less than 2	1201	22.24	1403	22.45	5955	36.25
2 to less than 5	2082	38.55	1960	31.37	5522	33.61
5 to less than 10	732	13.55	824	13.19	1702	10.36
10 to less than 32	234	4.33	797	12.75	1276	7.77
32 to less than 64	34	0.63	367	5.87	330	2.01
1 to less than 10 caballerías	39	0.72	396	6.34	271	1.65
10 to less than 20	7	0.13	28	0.45	8	0.05
20 to less than 50	12	0.22	11	0.18	0	0.00
50 to less than 100	4	0.07	4	0.06	0	0.00
100 to less than 200	4	0.07	0	0.00	1	0.01
200 caballerías and greater	4	0.07	0	0.00	0	0.00
Total Farms	**5401**	**100.00**	**6249**	**100.00**	**16428**	**100.00**
% of Total	**1.55**		**1.79**		**4.71**	

Farm Size	Jalapa	% of Dept.	Jutiapa	% of Dept.
Less than 1 manzana	731	6.05	1628	7.08
1 to less than 2	2663	22.02	5700	24.80
2 to less than 5	5015	41.48	8908	38.76
5 to less than 10	1909	15.79	3098	13.48
10 to less than 32	1071	8.86	2305	10.03
32 to less than 64	311	2.57	680	2.96
1 to less than 10 caballerías	363	3.00	621	2.70
10 to less than 20	15	0.12	30	0.13
20 to less than 50	13	0.11	10	0.04
50 to less than 100	0	0.00	1	0.00
100 to less than 200	0	0.00	0	0.00
200 caballerías and greater	0	0.00	1	0.00
Total Farms	**12091**	**100.00**	**22982**	**100.00**
% of Total	**3.47**		**6.59**	

Table A2: Farm Area Distribution by Department

(Source: Censo Agropecuario de 1950)

Farm Size	Republic	% of Dept.	Guatemala	% of Dept.	El Progreso	% of Dept.	Sacatepéquez	% of Dept.
Less than 1 manzana	40822	0.77	2101	0.83	242	0.19	884	1.73
1 to less than 2	135077	2.54	6876	2.72	1819	1.45	3784	7.39
2 to less than 5	302987	5.70	15202	6.02	5747	4.59	9456	18.48
5 to less than 10	282730	5.32	12411	4.92	6468	5.16	7288	14.24
10 to less than 32	444164	8.36	22400	8.88	9598	7.66	6433	12.57
32 to less than 64	271308	5.10	16850	6.68	7782	6.21	2622	5.12
1 to less than 10 caballerías	1161803	21.86	100309	39.75	54761	43.70	10905	21.31
10 to less than 20	506100	9.52	30883	12.24	14279	11.40	7044	13.76
20 to less than 50	707869	13.32	24813	9.83	2676	2.14	2763	5.40
50 to less than 100	468070	8.81	20522	8.13	12424	9.92	0	0.00
100 to less than 200	280476	5.28	0	0.00	9508	7.59	0	0.00
200 caballerías and greater	714069	13.43	0	0.00	0	0.00	0	0.00
Total Area	**5315475**	**100.00**	**252367**	**100.00**	**125304**	**100.00**	**51179**	**100.00**
% of Total			**4.75**		**2.36**		**0.96**	

Farm Size	Chimaltenango	% of Dept.	Escuintla	% of Dept.	Santa Rosa	% of Dept.	Sololá	% of Dept.
Less than 1 manzana	1590	0.89	3129	0.48	1109	0.30	1964	3.49
1 to less than 2	7126	3.99	3174	0.49	8306	2.21	6066	10.78
2 to less than 5	19891	11.15	4081	0.63	12436	3.31	12542	22.29
5 to less than 10	16494	9.25	3359	0.52	9292	2.48	8658	15.39
10 to less than 32	23225	13.02	5109	0.79	21389	5.70	7378	13.12
32 to less than 64	12042	6.75	5815	0.90	19227	5.12	1526	2.71
1 to less than 10 caballerías	43985	24.66	69033	10.63	110508	29.45	10402	18.49
10 to less than 20	28576	16.02	58493	9.00	46584	12.41	4140	7.36
20 to less than 50	21176	11.87	95836	14.75	66766	17.79	3580	6.36
50 to less than 100	4271	2.39	116261	17.90	21649	5.77	0	0.00
100 to less than 200	0	0.00	40223	6.19	44522	11.87	0	0.00
200 caballerías and greater	0	0.00	245075	37.73	13446	3.58	0	0.00
Total Area	**178376**	**100.00**	**649588**	**100.00**	**375234**	**100.00**	**56256**	**100.00**
% of Total	**3.36**		**12.22**		**7.06**		**1.06**	

Farm Size	Totonicapán	% of Dept.	Quezaltenango	% of Dept.	Suchitepéquez	% of Dept.	Retalhuleu	% of Dept.
Less than 1 manzana	5078	17.81	3970	2.02	3542	1.39	2259	1.17
1 to less than 2	6910	24.24	7514	3.83	3992	1.57	3672	1.90
2 to less than 5	6965	24.43	13225	6.73	4159	1.64	3885	2.01
5 to less than 10	4499	15.78	12441	6.33	2886	1.14	2809	1.46
10 to less than 32	3244	11.38	17704	9.01	5111	2.01	4658	2.41
32 to less than 64	888	3.11	7712	3.93	5350	2.11	3274	1.70
1 to less than 10 caballerías	928	3.25	51538	26.24	76263	30.01	28541	14.79
10 to less than 20	0	0.00	21715	11.06	50292	19.79	20746	10.75
20 to less than 50	0	0.00	31601	16.09	54670	21.51	46594	24.15
50 to less than 100	0	0.00	29003	14.77	14367	5.65	32713	16.95
100 to less than 200	0	0.00	0	0.00	14627	5.76	24618	12.76
200 caballerías and greater	0	0.00	0	0.00	18851	7.42	19200	9.95
Total Area	**28512**	**100.00**	**196423**	**100.00**	**254110**	**100.00**	**192969**	**100.00**
% of Total	**0.54**		**3.70**		**4.78**		**3.63**	

Farm Size	San Marcos	% of Dept.	Huehuetenango	% of Dept.	El Quiché	% of Dept.	Baja Verapaz	% of Dept.
Less than 1 manzana	4778	1.47	2632	0.77	2464	0.85	525	0.24
1 to less than 2	9305	2.86	14124	4.12	10032	3.46	3833	1.72
2 to less than 5	25405	7.82	31468	9.17	26330	9.09	12180	5.47
5 to less than 10	42341	13.04	30889	9.00	25898	8.94	11030	4.96
10 to less than 32	65130	20.05	45474	13.25	45041	15.55	23768	10.68
32 to less than 64	20968	6.46	24865	7.25	29174	10.07	20403	9.17
1 to less than 10 caballerías	73241	22.55	74393	21.68	53296	18.40	66316	29.80
10 to less than 20	32155	9.90	23335	6.80	19378	6.69	11549	5.19
20 to less than 50	22224	6.84	49991	14.57	41573	14.35	43939	19.74
50 to less than 100	5504	1.69	27990	8.16	36471	12.59	29018	13.04
100 to less than 200	9496	2.92	17916	5.22	0	0.00	0	0.00
200 caballerías and greater	14264	4.39	0	0.00	0	0.00	0	0.00
Total Area	**324811**	**100.00**	**343077**	**100.00**	**289657**	**100.00**	**222561**	**100.00**
% of Total	**6.11**		**6.45**		**5.45**		**4.19**	

Farm Size	Alta Verapaz	% of Dept.	El Petén	% of Dept.	Izabal	% of Dept.	Zacapa	% of Dept.
Less than 1 manzana	1665	0.24	50	0.23	504	0.17	224	0.13
1 to less than 2	13623	1.93	481	2.24	1584	0.54	2043	1.22
2 to less than 5	28002	3.96	2729	12.73	6053	2.07	5851	3.50
5 to less than 10	28145	3.98	3717	17.34	4692	1.61	5369	3.21
10 to less than 32	39125	5.54	3650	17.03	3407	1.17	13799	8.24
32 to less than 64	14840	2.10	1239	5.78	1542	0.53	16026	9.57
1 to less than 10 caballerías	57872	8.19	3669	17.11	9070	3.11	60511	36.15
10 to less than 20	54018	7.65	3984	18.58	6807	2.33	26160	15.63
20 to less than 50	106066	15.01	1920	8.96	25119	8.61	20340	12.15
50 to less than 100	78639	11.13	0	0.00	18140	6.22	17054	10.19
100 to less than 200	69633	9.86	0	0.00	42898	14.71	0	0.00
200 caballerías and greater	214825	30.41	0	0.00	171901	58.93	0	0.00
Total Area	**706453**	**100.00**	**21439**	**100.00**	**291717**	**100.00**	**167377**	**100.00**
% of Total	**13.29**		**0.40**		**5.49**		**3.15**	

Farm Size	Chiquimula	% of Dept.	Jalapa	% of Dept.	Jutiapa	% of Dept.
Less than 1 manzana	799	0.63	441	0.27	869	0.29
1 to less than 2	8245	6.53	4220	2.54	8345	2.82
2 to less than 5	15440	12.23	15701	9.44	26211	8.87
5 to less than 10	11010	8.72	12714	7.65	20318	6.87
10 to less than 32	21424	16.97	18038	10.85	39056	13.21
32 to less than 64	15028	11.91	14029	8.44	30101	10.18
1 to less than 10 caballerías	40074	31.75	65322	39.28	100876	34.12
10 to less than 20	7073	5.60	13554	8.15	25332	8.57
20 to less than 50	0	0.00	22275	13.39	23947	8.10
50 to less than 100	0	0.00	0	0.00	4046	1.37
100 to less than 200	7135	5.65	0	0.00	0	0.00
200 caballerías and greater	0	0.00	0	0.00	16512	5.59
Total Area	**126228**	**100.00**	**166294**	**100.00**	**295613**	**100.00**
% of Total	**2.37**		**3.13**		**5.56**	

Table A3: Value of the Ten Selected Crops and Farm Area by Department
(Source: Censo Agropecuario de 1950)

Department	Production Value (US$)	% of Total	Farm Area	% of Total
Guatemala	2,485,909	3.9	252,367	4.7
El Progreso	477,984	0.8	125,304	2.4
Sacatepéquez	882,637	1.4	51,179	1.0
Chimaltenango	6,348,826	10.1	178,376	3.4
Escuintla	6,299,805	10.0	649,588	12.2
Santa Rosa	4,230,899	6.7	375,234	7.1
Sololá	1,027,061	1.6	56,256	1.1
Totonicapán	882,456	1.4	28,512	0.5
Quezaltenango	6,181,833	9.8	196,423	3.7
Suchitepéquez	5,326,257	8.4	254,110	4.8
Retalhuleu	2,827,694	4.5	192,969	3.6
San Marcos	7,743,917	12.3	324,811	6.1
Huehuetenango	3,268,789	5.2	343,077	6.5
El Quiché	2,489,708	3.9	289,657	5.4
Baja Verapaz	1,140,850	1.8	222,561	4.2
Alta Verapaz	4,414,180	7.0	706,453	13.3
El Petén	312,935	0.5	21,439	0.4
Izabal	1,457,553	2.3	291,717	5.5
Zacapa	1,183,559	1.9	167,377	3.1
Chiquimula	2,122,888	3.4	126,228	2.4
Jalapa	1,355,396	2.1	166,294	3.1
Jutiapa	3,438,323	5.4	295,613	5.6
Total	**63,121,516**	**100.0**	**5,315,475**	**100.0**

Table A4: Contribution to Production by Crop for Departments

(Source: Censo Agropecuario de 1950)

Crop	Republic	Guatemala	El Progreso	Sacatepéquez	Chimaltenango	Escuintla	Santa Rosa	Sololá
Coffee	35.4	36.9	2.2	48.9	29.5	23.2	52.8	23.8
Bananas	4.9	0.3	3.4	0.0	0.0	30.3	0.2	0.1
Corn	36.2	38.3	37.1	38.8	60.9	18.6	23.2	44.8
Black Beans	5.7	7.6	6.9	8.2	2.6	0.9	7.8	7.0
Wheat	4.2	0.0	0.0	0.0	4.0	0.0	0.0	16.6
Millet	1.0	0.7	0.2	0.0	0.0	0.0	0.5	0.0
Broad Beans	0.9	0.1	0.0	0.1	0.5	0.1	0.0	3.4
Rice	0.9	0.0	0.0	0.0	0.0	0.0	3.2	0.0
Tobacco	3.3	11.7	25.1	0.0	0.1	0.0	1.3	0.3
Sugar Cane	7.6	4.4	25.0	4.0	2.2	26.9	10.9	3.9
Total	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**

Crop	Totonicapán	Quezaltenango	Suchitepéquez	Retalhuleu	San Marcos	Huehuetenango	El Quiché	Baja Verapaz
Coffee	0.0	54.3	66.7	40.2	59.9	5.4	8.9	18.5
Bananas	0.0	0.4	5.6	2.8	0.6	0.2	0.0	0.0
Corn	42.9	25.1	16.5	46.9	23.8	70.2	71.4	54.8
Black Beans	4.5	1.0	0.3	0.6	2.4	5.9	9.2	8.0
Wheat	37.2	12.0	0.0	0.0	9.4	10.8	1.6	0.0
Millet	0.0	0.0	0.0	0.0	0.0	0.0	0.5	4.7
Broad Beans	14.6	3.5	0.0	0.0	1.4	0.7	0.6	0.0
Rice	0.0	0.3	1.3	1.4	0.2	0.0	0.0	0.1
Tobacco	0.8	0.7	0.0	0.1	0.7	1.6	1.7	0.0
Sugar Cane	0.0	2.7	9.5	8.0	1.5	5.1	6.1	13.8
Total	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**

Crop	Alta Verapaz	El Petén	Izabal	Zacapa	Chiquimula	Jalapa	Jutiapa
Coffee	36.0	0.0	1.5	13.6	0.6	0.8	1.8
Bananas	0.1	1.0	39.3	0.5	2.3	0.8	0.8
Corn	54.9	80.3	48.9	44.9	45.2	57.7	38.8
Black Beans	6.4	12.2	9.2	12.2	16.8	15.4	20.7
Wheat	0.0	0.0	0.0	0.0	0.0	0.8	0.0
Millet	0.0	0.0	0.0	0.3	4.0	0.7	12.5
Broad Beans	0.1	0.0	0.2	0.0	0.1	0.2	0.1
Rice	0.1	0.1	0.2	0.5	0.8	1.4	6.0
Tobacco	0.1	0.0	0.7	12.6	22.5	16.2	15.8
Sugar Cane	2.2	6.4	0.0	15.4	7.6	6.2	3.6
Total	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**

Table A5: Contribution of Farm Size to Crop Production by Department (%)

(Source: Censo Agropecuario de 1950)

Coffee	Republic	Guatemala	El Progreso	Sacatepéquez	Chimaltenango	Escuintla	Santa Rosa	Sololá	Totonicapán
Less than 1 manzana	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1 to less than 2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2 to less than 5	0.05	0.16	0.00	0.20	0.00	0.00	0.11	1.02	0.00
5 to less than 10	0.34	0.45	0.00	2.97	0.08	0.06	0.98	1.10	0.00
10 to less than 32	2.33	5.06	0.00	9.63	1.18	0.67	4.40	9.55	0.00
32 to less than 64	2.81	4.38	0.00	12.67	0.54	0.52	4.56	4.52	0.00
1 to less than 10 caballerías	44.20	60.87	39.93	60.29	26.15	11.84	31.57	55.17	0.00
10 to less than 20	17.52	11.20	0.00	10.37	29.90	7.22	18.93	20.02	0.00
20 to less than 50	17.89	16.14	0.00	3.87	32.40	24.82	19.62	8.61	0.00
50 to less than 100	9.53	1.75	60.07	0.00	9.77	33.54	19.82	0.00	0.00
100 to less than 200	3.87	0.00	0.00	0.00	0.00	21.33	0.00	0.00	0.00
200 caballerías and greater	1.46	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total	**100.00**	**100.00**	**100.00**	**100.00**	**100.00**	**100.00**	**100.00**	**100.00**	**0.00**

Coffee	Quezaltenango	Suchitepéquez	Retalhuleu	San Marcos	Huehuetenango	El Quiché	Baja Verapaz	Alta Verapaz	El Petén
Less than 1 manzana	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1 to less than 2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2 to less than 5	0.00	0.03	0.00	0.04	0.67	0.00	0.00	0.00	0.00
5 to less than 10	0.21	0.10	0.00	0.37	0.83	0.00	0.00	0.00	0.00
10 to less than 32	1.72	1.38	0.88	3.01	8.35	0.00	0.49	0.09	0.00
32 to less than 64	2.12	1.88	6.57	3.27	9.43	0.00	0.00	0.18	0.00
1 to less than 10 caballerías	64.88	49.29	80.90	50.15	63.20	10.60	18.76	9.68	0.00
10 to less than 20	8.27	24.75	8.26	24.65	12.94	1.96	4.60	9.80	0.00
20 to less than 50	14.46	18.39	3.00	12.46	4.57	87.44	50.36	17.70	0.00
50 to less than 100	8.33	4.19	0.00	0.00	0.00	0.00	15.25	26.55	0.00
100 to less than 200	0.00	0.00	0.40	6.05	0.00	0.00	10.54	15.48	0.00
200 caballerías and greater	0.00	0.00	0.00	0.00	0.00	0.00	0.00	20.51	0.00
Total	**100.00**	**100.00**	**100.00**	**100.00**	**100.00**	**100.00**	**100.00**	**100.00**	**0.00**

Coffee	Izabal	Zacapa	Chiquimula	Jalapa	Jutiapa
Less than 1 manzana	0.00	0.00	0.00	0.00	0.00
1 to less than 2	0.00	0.00	0.00	0.00	0.00
2 to less than 5	0.00	0.00	0.00	0.00	0.00
5 to less than 10	0.00	0.00	0.00	0.00	3.28
10 to less than 32	0.00	0.52	6.21	0.00	5.47
32 to less than 64	0.00	5.67	0.00	8.17	11.74
1 to less than 10 caballerías	0.00	7.42	85.35	24.51	20.33
10 to less than 20	0.00	2.96	8.44	14.54	50.97
20 to less than 50	0.00	30.44	0.00	52.78	8.21
50 to less than 100	100.00	53.00	0.00	0.00	0.00
100 to less than 200	0.00	0.00	0.00	0.00	0.00
200 caballerías and greater	0.00	0.00	0.00	0.00	0.00
Total	**100.00**	**100.00**	**100.00**	**100.00**	**100.00**

Wheat	Republic	Guatemala	El Progreso	Sacatepéquez	Chimaltenango	Escuintla	Santa Rosa	Sololá	Totonicapán
Less than 1 manzana	3.94	0.00	0.00	0.00	0.38	0.00	0.00	6.55	14.5
1 to less than 2	13.47	50.00	0.00	0.00	3.04	0.00	0.00	20.81	32.8
2 to less than 5	27.30	0.00	100.00	20.00	23.46	100.00	43.16	31.45	31.3
5 to less than 10	24.07	0.00	0.00	0.00	22.32	0.00	8.12	20.33	12.7
10 to less than 32	21.08	0.00	0.00	20.00	22.57	0.00	17.09	11.78	5.4
32 to less than 64	4.66	0.00	0.00	0.00	8.13	0.00	3.85	2.41	1.9
1 to less than 10 caballerías	4.98	50.00	0.00	60.00	18.25	0.00	27.78	2.79	1.4
10 to less than 20	0.18	0.00	0.00	0.00	1.84	0.00	0.00	0.01	0.0
20 to less than 50	0.26	0.00	0.00	0.00	0.00	0.00	0.00	3.86	0.0
50 to less than 100	0.07	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.0
100 to less than 200	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.0
200 caballerías and greater	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.0
Total	**100.00**	**100.00**	**100.00**	**100.00**	**100.00**	**100.00**	**100.00**	**100.00**	**100.0**

Wheat	Quezaltenango	Suchitepéquez	Retalhuleu	San Marcos	Huehuetenango	El Quiché	Baja Verapaz	Alta Verapaz	El Petén
Less than 1 manzana	4.3	0.0	10.0	0.8	1.7	0.8	0.0	2.5	0.0
1 to less than 2	14.9	0.0	30.0	6.4	11.6	9.7	0.0	2.5	0.0
2 to less than 5	28.2	100.0	0.0	24.8	26.5	36.4	2.1	85.0	0.0
5 to less than 10	21.1	0.0	0.0	31.6	28.4	28.5	0.0	0.0	0.0
10 to less than 32	19.6	0.0	60.0	29.5	24.6	18.1	0.0	10.0	0.0
32 to less than 64	5.6	0.0	0.0	4.4	4.2	4.0	97.9	0.0	0.0
1 to less than 10 caballerías	6.2	0.0	0.0	2.5	2.6	2.4	0.0	0.0	0.0
10 to less than 20	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
20 to less than 50	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
50 to less than 100	0.0	0.0	0.0	0.0	0.5	0.0	0.0	0.0	0.0
100 to less than 200	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
200 caballerías and greater	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**0.0**

Wheat	Izabal	Zacapa	Chiquimula	Jalapa	Jutiapa
Less than 1 manzana	0.0	0.0	0.0	0.0	0.0
1 to less than 2	0.0	0.0	0.0	1.9	17.7
2 to less than 5	81.1	0.0	0.0	19.6	23.4
5 to less than 10	18.9	0.0	92.9	20.8	33.3
10 to less than 32	0.0	0.0	7.1	44.8	14.9
32 to less than 64	0.0	0.0	0.0	12.2	10.6
1 to less than 10 caballerías	0.0	0.0	0.0	0.7	0.0
10 to less than 20	0.0	0.0	0.0	0.0	0.0
20 to less than 50	0.0	0.0	0.0	0.0	0.0
50 to less than 100	0.0	0.0	0.0	0.0	0.0
100 to less than 200	0.0	0.0	0.0	0.0	0.0
200 caballerías and greater	0.0	0.0	0.0	0.0	0.0
Total	**100.0**	**0.0**	**100.0**	**100.0**	**100.0**

Bananas	Republic	Guatemala	El Progreso	Sacatepéquez	Chimaltenango	Escuintla	Santa Rosa	Sololá	Totonicapán
Less than 1 manzana	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.0
1 to less than 2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.0
2 to less than 5	1.78	11.40	20.89	100.00	2.34	0.09	26.93	80.30	0.0
5 to less than 10	1.97	8.42	32.38	0.00	4.67	0.20	17.80	18.44	0.0
10 to less than 32	2.13	9.47	17.43	0.00	1.63	0.16	31.08	1.26	0.0
32 to less than 64	1.17	35.01	7.62	0.00	2.34	0.07	8.14	0.00	0.0
1 to less than 10 caballerías	5.10	31.00	21.50	0.00	83.19	1.60	15.58	0.00	0.0
10 to less than 20	10.84	4.70	0.19	0.00	5.84	4.85	0.00	0.00	0.0
20 to less than 50	3.97	0.00	0.00	0.00	0.00	1.46	0.00	0.00	0.0
50 to less than 100	0.35	0.00	0.00	0.00	0.00	0.49	0.00	0.00	0.0
100 to less than 200	0.00	0.00	0.00	0.00	0.00	0.00	0.47	0.00	0.0
200 caballerías and greater	72.68	0.00	0.00	0.00	0.00	91.08	0.00	0.00	0.0
Total	**100.00**	**100.00**	**100.00**	**100.00**	**100.00**	**100.00**	**100.00**	**100.00**	**0.0**

Bananas	Quezaltenango	Suchitepéquez	Retalhuleu	San Marcos	Huehuetenango	El Quiché	Baja Verapaz	Alta Verapaz	El Petén
Less than 1 manzana	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1 to less than 2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2 to less than 5	2.3	0.6	2.0	10.6	12.6	4.4	0.0	12.5	25.8
5 to less than 10	1.4	1.2	0.8	12.0	19.1	7.2	0.0	15.4	31.8
10 to less than 32	5.7	0.9	0.7	15.5	17.6	11.1	0.0	17.3	16.3
32 to less than 64	1.3	1.3	1.0	9.9	27.3	48.6	0.0	28.0	18.4
1 to less than 10 caballerías	51.1	14.2	7.7	16.2	17.1	17.5	0.0	0.3	2.5
10 to less than 20	32.1	70.3	25.7	3.5	4.3	11.1	0.0	1.1	0.0
20 to less than 50	6.1	9.0	61.5	32.5	2.0	0.0	0.0	3.1	5.1
50 to less than 100	0.0	0.0	0.5	0.0	0.0	0.0	0.0	22.4	0.0
100 to less than 200	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
200 caballerías and greater	0.0	2.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**0.0**	**100.0**	**100.0**

Bananas	Izabal	Zacapa	Chiquimula	Jalapa	Jutiapa
Less than 1 manzana	0.0	0.0	0.0	0.0	0.0
1 to less than 2	0.0	0.0	0.0	0.0	0.0
2 to less than 5	1.4	8.7	35.2	24.4	16.7
5 to less than 10	3.2	23.6	19.0	31.9	11.5
10 to less than 32	2.1	51.1	27.5	29.4	33.4
32 to less than 64	0.6	8.6	9.3	5.4	26.0
1 to less than 10 caballerías	6.9	8.1	8.4	7.0	12.1
10 to less than 20	0.2	0.0	0.5	0.0	0.4
20 to less than 50	0.1	0.0	0.0	1.9	0.0
50 to less than 100	0.0	0.0	0.0	0.0	0.0
100 to less than 200	0.0	0.0	0.0	0.0	0.0
200 caballerías and greater	85.6	0.0	0.0	0.0	0.0
Total	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**

Black Beans	Republic	Guatemala	El Progreso	Sacatepéquez	Chimaltenango	Escuintla	Santa Rosa	Sololá	Totonicapán
Less than 1 manzana	3.52	4.77	1.08	2.55	2.38	5.07	2.39	8.30	28.2
1 to less than 2	15.43	13.06	12.63	10.03	11.21	13.21	23.26	21.44	26.8
2 to less than 5	31.41	26.70	15.93	32.48	28.87	24.96	45.92	35.67	13.2
5 to less than 10	17.30	13.42	17.65	23.25	18.79	20.52	8.53	15.23	5.6
10 to less than 32	14.21	12.37	13.00	16.50	18.10	10.00	7.66	13.62	4.8
32 to less than 64	5.05	4.86	5.24	4.92	7.03	2.06	3.06	2.17	1.1
1 to less than 10 caballerías	8.08	16.91	30.10	8.11	6.87	6.85	7.15	2.60	20.4
10 to less than 20	1.48	3.11	2.49	2.15	3.95	3.74	0.43	0.17	0.0
20 to less than 50	2.51	4.14	0.88	0.00	0.20	13.52	1.51	0.80	0.0
50 to less than 100	0.41	0.67	0.22	0.00	2.61	0.07	0.00	0.00	0.0
100 to less than 200	0.51	0.00	0.77	0.00	0.00	0.00	0.00	0.00	0.0
200 caballerías and greater	0.09	0.00	0.00	0.00	0.00	0.00	0.09	0.00	0.0
Total	**100.00**	**100.00**	**100.00**	**100.00**	**100.00**	**100.00**	**100.00**	**100.00**	**100.0**

Black Beans	Quezaltenango	Suchitepéquez	Retalhuleu	San Marcos	Huehuetenango	El Quiché	Baja Verapaz	Alta Verapaz	El Petén
Less than 1 manzana	15.6	13.1	32.8	7.7	2.7	5.8	1.3	2.3	0.7
1 to less than 2	20.9	14.2	26.1	11.5	14.5	17.9	12.7	18.2	4.4
2 to less than 5	22.4	8.6	14.2	23.7	29.3	28.5	30.5	23.6	22.8
5 to less than 10	13.4	2.7	6.2	25.7	23.5	19.6	14.9	11.4	24.2
10 to less than 32	10.7	2.7	6.3	20.4	16.8	15.4	16.7	9.3	29.8
32 to less than 64	3.8	0.7	0.4	2.9	4.5	6.1	9.5	1.8	10.8
1 to less than 10 caballerías	11.0	57.2	14.0	7.3	7.6	5.2	6.1	3.4	6.6
10 to less than 20	1.2	0.8	0.0	0.9	0.6	0.4	0.3	1.4	0.7
20 to less than 50	1.0	0.0	0.0	0.0	0.4	1.1	0.7	21.0	0.0
50 to less than 100	0.0	0.0	0.0	0.0	0.0	0.1	7.3	0.5	0.0
100 to less than 200	0.0	0.0	0.0	0.0	0.0	0.0	0.0	6.2	0.0
200 caballerías and greater	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0
Total	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**

Black Beans	Izabal	Zacapa	Chiquimula	Jalapa	Jutiapa
Less than 1 manzana	6.8	1.1	1.7	1.7	0.9
1 to less than 2	14.5	14.2	20.3	14.6	10.9
2 to less than 5	31.3	23.9	31.7	40.5	35.9
5 to less than 10	18.8	12.2	17.0	18.0	21.4
10 to less than 32	10.0	17.5	14.8	11.4	17.1
32 to less than 64	4.0	11.2	6.5	4.4	5.8
1 to less than 10 caballerías	2.3	15.5	7.2	7.9	7.4
10 to less than 20	10.9	2.1	0.8	0.7	0.6
20 to less than 50	0.4	2.2	0.0	0.9	0.0
50 to less than 100	0.5	0.0	0.0	0.0	0.0
100 to less than 200	0.3	0.0	0.0	0.0	0.0
200 caballerías and greater	0.0	0.0	0.0	0.0	0.0
Total	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**

Corn	Republic	Guatemala	El Progreso	Sacatepéquez	Chimaltenango	Escuintla	Santa Rosa	Sololá	Totonicapán
Less than 1 manzana	7.30	5.44	1.83	4.75	1.11	17.42	4.16	8.50	33.6
1 to less than 2	17.72	15.94	12.97	17.42	3.90	13.80	24.87	23.25	33.0
2 to less than 5	26.04	24.34	24.11	33.92	80.48	12.76	26.16	38.16	20.1
5 to less than 10	14.89	10.00	16.86	20.46	4.97	6.44	10.66	14.71	7.8
10 to less than 32	12.52	9.80	13.27	12.89	4.20	4.36	11.10	8.82	3.8
32 to less than 64	4.11	4.64	5.74	3.35	1.42	4.22	5.66	1.31	0.7
1 to less than 10 caballerías	7.64	20.19	19.97	6.56	2.36	12.92	11.96	3.37	1.0
10 to less than 20	2.25	4.83	3.50	0.51	1.36	5.00	1.60	1.33	0.0
20 to less than 50	4.10	4.17	1.07	0.15	0.10	14.09	2.88	0.54	0.0
50 to less than 100	1.53	0.64	0.18	0.00	0.10	7.08	0.84	0.00	0.0
100 to less than 200	1.47	0.00	0.51	0.00	0.00	1.50	0.09	0.00	0.0
200 caballerías and greater	0.41	0.00	0.00	0.00	0.00	0.40	0.03	0.00	0.0
Total	**100.00**	**100.00**	**100.00**	**100.00**	**100.00**	**100.00**	**100.00**	**100.00**	**100.0**

Corn	Quezaltenango	Suchitepéquez	Retalhuleu	San Marcos	Huehuetenango	El Quiché	Baja Verapaz	Alta Verapaz	El Petén
Less than 1 manzana	13.8	21.3	13.6	13.4	3.4	3.7	1.9	2.0	0.2
1 to less than 2	22.8	18.8	25.1	18.7	17.0	13.9	14.4	16.7	4.2
2 to less than 5	21.7	11.0	19.7	20.2	31.3	28.4	28.9	24.4	22.4
5 to less than 10	12.1	4.0	5.8	19.6	20.8	19.5	15.5	13.5	27.3
10 to less than 32	9.7	3.5	4.7	17.8	15.8	20.2	18.0	10.3	24.0
32 to less than 64	3.5	3.6	2.1	3.1	4.1	5.9	5.7	2.1	8.3
1 to less than 10 caballerías	6.1	14.2	5.2	5.0	5.1	5.2	10.0	3.9	8.2
10 to less than 20	4.2	4.6	3.1	2.0	0.5	0.9	0.5	2.0	5.4
20 to less than 50	1.6	16.3	17.6	0.2	0.7	1.7	1.8	8.4	0.0
50 to less than 100	4.6	2.7	2.9	0.0	1.0	0.6	3.0	1.0	0.0
100 to less than 200	0.0	0.0	0.2	0.0	0.2	0.0	0.0	12.1	0.0
200 caballerías and greater	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.7	0.0
Total	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**

Corn	Izabal	Zacapa	Chiquimula	Jalapa	Jutiapa
Less than 1 manzana	5.6	1.6	2.6	1.5	1.8
1 to less than 2	10.4	13.3	25.6	11.6	15.1
2 to less than 5	37.1	21.6	35.3	34.3	34.8
5 to less than 10	22.3	12.2	14.0	21.0	17.8
10 to less than 32	12.3	14.4	12.4	15.3	15.2
32 to less than 64	2.0	11.2	4.3	5.0	5.5
1 to less than 10 caballerías	2.0	16.8	5.3	9.9	8.8
10 to less than 20	1.6	4.1	0.5	0.8	0.6
20 to less than 50	1.1	2.8	0.0	0.5	0.1
50 to less than 100	3.1	2.0	0.0	0.0	0.3
100 to less than 200	2.4	0.0	0.0	0.0	0.0
200 caballerías and greater	0.0	0.0	0.0	0.0	0.0
Total	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**

Rice	Republic	Guatemala	El Progreso	Sacatepéquez	Chimaltenango	Escuintla	Santa Rosa	Sololá	Totonicapán
Less than 1 manzana	5.28	0.00	8.00	0.00	0.00	3.67	1.69	0.00	62.2
1 to less than 2	14.14	2.35	0.00	100.00	6.54	6.88	14.07	18.56	15.6
2 to less than 5	27.20	21.76	12.00	0.00	6.21	10.32	28.86	50.52	22.2
5 to less than 10	15.03	14.71	5.33	0.00	9.80	13.07	12.02	30.93	0.0
10 to less than 32	13.58	0.00	38.67	0.00	0.33	7.57	10.71	0.00	0.0
32 to less than 64	5.52	3.53	17.33	0.00	0.00	8.03	5.05	0.00	0.0
1 to less than 10 caballerías	12.48	44.71	18.67	0.00	1.96	4.36	21.92	0.00	0.0
10 to less than 20	2.26	2.35	0.00	0.00	6.54	29.59	4.99	0.00	0.0
20 to less than 50	0.74	10.59	0.00	0.00	0.00	16.51	0.70	0.00	0.0
50 to less than 100	0.22	0.00	0.00	0.00	68.63	0.00	0.00	0.00	0.0
100 to less than 200	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.0
200 caballerías and greater	3.54	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.0
Total	**100.00**	**100.00**	**100.00**	**100.00**	**100.00**	**100.00**	**100.00**	**100.00**	**100.0**

Rice	Quezaltenango	Suchitepéquez	Retalhuleu	San Marcos	Huehuetenango	El Quiché	Baja Verapaz	Alta Verapaz	El Petén
Less than 1 manzana	9.5	19.8	18.3	9.6	0.0	10.3	1.9	0.2	0.0
1 to less than 2	26.2	24.3	34.8	21.9	8.0	0.0	6.6	5.3	7.2
2 to less than 5	16.8	14.4	20.5	23.4	41.7	50.5	20.0	7.1	42.4
5 to less than 10	10.7	4.7	10.8	18.2	8.3	2.1	10.7	2.9	22.3
10 to less than 32	13.4	3.7	9.0	17.5	40.3	4.1	10.7	1.7	0.7
32 to less than 64	3.9	1.8	2.8	3.5	0.7	16.5	19.0	0.0	21.6
1 to less than 10 caballerías	12.6	3.8	1.1	4.0	1.0	16.5	27.7	10.5	5.8
10 to less than 20	6.9	1.8	0.0	1.9	0.0	0.0	2.5	12.2	0.0
20 to less than 50	0.0	0.0	2.6	0.0	0.0	0.0	0.8	31.8	0.0
50 to less than 100	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.8	0.0
100 to less than 200	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.5	0.0
200 caballerías and greater	0.0	25.7	0.0	0.0	0.0	0.0	0.0	24.9	0.0
Total	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**

Rice	Izabal	Zacapa	Chiquimula	Jalapa	Jutiapa
Less than 1 manzana	0.6	0.1	0.1	0.2	0.7
1 to less than 2	6.2	17.7	5.2	2.3	7.4
2 to less than 5	40.1	17.3	23.7	38.4	32.8
5 to less than 10	19.4	18.0	17.2	24.3	20.5
10 to less than 32	10.7	17.7	18.1	9.2	19.6
32 to less than 64	7.5	18.0	7.6	8.2	7.1
1 to less than 10 caballerías	2.1	7.3	25.8	17.1	11.0
10 to less than 20	6.3	2.7	2.2	0.4	0.5
20 to less than 50	0.8	0.0	0.0	0.0	0.2
50 to less than 100	6.3	1.3	0.0	0.0	0.1
100 to less than 200	0.0	0.0	0.0	0.0	0.0
200 caballerías and greater	0.0	0.0	0.0	0.0	0.0
Total	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**

Sugar Cane	Republic	Guatemala	El Progreso	Sacatepéquez	Chimaltenango	Escuintla	Santa Rosa	Sololá	Totonicapán
Less than 1 manzana	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.0
1 to less than 2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.0
2 to less than 5	3.88	0.20	6.13	0.00	1.38	0.00	8.64	0.00	0.0
5 to less than 10	5.28	0.98	12.25	0.00	1.38	0.29	13.59	0.00	0.0
10 to less than 32	8.84	16.11	15.86	0.00	2.30	0.32	22.74	0.00	0.0
32 to less than 64	6.48	15.72	8.47	1.82	2.14	1.03	13.82	0.00	0.0
1 to less than 10 caballerías	26.62	32.61	46.31	72.73	36.91	12.34	22.46	39.25	0.0
10 to less than 20	12.62	31.43	9.37	0.00	44.87	8.57	2.10	0.00	0.0
20 to less than 50	12.78	2.95	0.36	25.45	3.52	17.98	16.67	60.75	0.0
50 to less than 100	15.72	0.00	1.26	0.00	7.50	41.59	0.00	0.00	0.0
100 to less than 200	7.78	0.00	0.00	0.00	0.00	17.89	0.00	0.00	0.0
200 caballerías and greater	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.0
Total	**100.00**	**100.00**	**100.00**	**100.00**	**100.00**	**100.00**	**100.00**	**100.00**	**0.0**

Sugar Cane	Quezaltenango	Suchitepéquez	Retalhuleu	San Marcos	Huehuetenango	El Quiché	Baja Verapaz	Alta Verapaz	El Petén
Less than 1 manzana	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1 to less than 2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2 to less than 5	1.1	0.0	0.5	4.0	19.4	9.6	11.2	11.4	19.4
5 to less than 10	0.4	0.0	1.9	12.4	19.1	12.3	14.1	11.0	35.5
10 to less than 32	1.4	0.3	1.0	22.3	24.5	25.4	18.5	10.7	28.0
32 to less than 64	3.3	3.2	1.3	13.9	9.1	18.8	11.8	8.1	14.0
1 to less than 10 caballerías	54.3	31.1	50.0	42.8	20.9	26.6	32.4	26.8	2.2
10 to less than 20	12.1	52.5	0.2	1.6	3.8	1.8	1.5	2.0	0.0
20 to less than 50	12.2	12.9	15.0	2.9	2.9	5.4	8.8	26.8	1.1
50 to less than 100	15.2	0.0	0.0	0.0	0.4	0.0	1.6	3.1	0.0
100 to less than 200	0.0	0.0	30.0	0.0	0.0	0.0	0.0	0.2	0.0
200 caballerías and greater	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**

Sugar Cane	Izabal	Zacapa	Chiquimula	Jalapa	Jutiapa
Less than 1 manzana	0.0	0.0	0.0	0.0	0.0
1 to less than 2	0.0	0.0	0.0	0.0	0.0
2 to less than 5	0.0	5.1	16.3	5.9	6.5
5 to less than 10	0.0	7.5	17.0	5.4	8.2
10 to less than 32	0.0	20.8	24.8	14.8	19.3
32 to less than 64	0.0	14.6	14.5	21.0	11.6
1 to less than 10 caballerías	0.0	42.8	26.8	36.3	43.8
10 to less than 20	0.0	8.6	0.7	11.5	7.9
20 to less than 50	0.0	0.6	0.0	5.1	2.8
50 to less than 100	100.0	0.0	0.0	0.0	0.0
100 to less than 200	0.0	0.0	0.0	0.0	0.0
200 caballerías and greater	0.0	0.0	0.0	0.0	0.0
Total	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**

Millet	Republic	Tobacco	Republic	Broad Beans	Republic
Less than 1 manzana	2.55	Less than 1 manzana	0.57	Less than 1 manzana	14.86
1 to less than 2	18.61	1 to less than 2	4.10	1 to less than 2	23.24
2 to less than 5	35.54	2 to less than 5	23.30	2 to less than 5	28.22
5 to less than 10	16.13	5 to less than 10	15.83	5 to less than 10	16.88
10 to less than 32	15.67	10 to less than 32	16.74	10 to less than 32	11.52
32 to less than 64	4.61	32 to less than 64	9.22	32 to less than 64	2.21
1 to less than 10 caballerías	6.10	1 to less than 10 caballerías	21.44	1 to less than 10 caballerías	2.80
10 to less than 20	0.43	10 to less than 20	7.41	10 to less than 20	0.08
20 to less than 50	0.34	20 to less than 50	1.24	20 to less than 50	0.14
50 to less than 100	0.01	50 to less than 100	0.16	50 to less than 100	0.04
100 to less than 200	0.00	100 to less than 200	0.00	100 to less than 200	0.00
200 caballerías and greater	0.00	200 caballerías and greater	0.00	200 caballerías and greater	0.00
Total	**100.00**	**Total**	**100.00**	**Total**	**100.00**

Table A6: National Crop Distribution by Farm Size

(Source: Censo Agropecuario de 1950)

Coffee

Farm Size	Number of Farms	% of Total	Harvested Area	% of Total
Less than 1 manzana	0	0.00	0	0.00
1 to less than 2	0	0.00	0	0.00
2 to less than 5	12	0.69	41	0.02
5 to less than 10	67	3.84	407	0.22
10 to less than 32	264	15.14	3457	1.90
32 to less than 64	190	10.89	4345	2.39
1 to less than 10 caballerías	886	50.80	82868	45.65
10 to less than 20	153	8.77	33276	18.33
20 to less than 50	118	6.77	30600	16.86
50 to less than 100	35	2.01	16569	9.13
100 to less than 200	13	0.75	5923	3.26
200 caballerías y greater	6	0.34	4041	2.23
Total	**1744**	**100.00**	**181527**	**100.00**

Tobacco

Number of Farms	% of Total	Harvested Area	% of Total
37	2.53	14	0.58
142	9.71	87	3.63
584	39.95	502	20.94
290	19.84	382	15.94
207	14.16	438	18.27
83	5.68	236	9.85
103	7.05	506	21.11
8	0.55	149	6.22
7	0.48	75	3.13
1	0.07	8	0.33
0	0.00	0	0.00
0	0.00	0	0.00
1462	**100.00**	**2397**	**100.00**

Bananas

Farm Size	Number of Farms	% of Total	Harvested Area	% of Total
Less than 1 manzana	0	0.00	0	0.00
1 to less than 2	0	0.00	0	0.00
2 to less than 5	753	33.01	312	1.29
5 to less than 10	616	27.01	411	1.69
10 to less than 32	498	21.83	501	2.07
32 to less than 64	155	6.80	351	1.45
1 to less than 10 caballerías	204	8.94	2872	11.84
10 to less than 20	26	1.14	2016	8.31
20 to less than 50	18	0.79	1275	5.26
50 to less than 100	6	0.26	168	0.69
100 to less than 200	1	0.04	2	0.01
200 caballerías y greater	4	0.18	16343	67.39
Total	**2281**	**100.00**	**24251**	**100.00**

Corn

Number of Farms	% of Total	Harvested Area	% of Total
80032	20.87	42527	5.41
105934	27.62	124731	15.85
110052	28.69	218292	27.75
45170	11.78	131799	16.75
28835	7.52	113218	14.39
6604	1.72	38007	4.83
5964	1.55	68384	8.69
497	0.13	14927	1.90
301	0.08	18080	2.30
110	0.03	10044	1.28
31	0.01	2920	0.37
17	0.00	3819	0.49
383547	**100.00**	**786748**	**100.00**

Rice

Farm Size	Number of Farms	% of Total	Harvested Area	% of Total
Less than 1 manzana	1938	13.21	517	4.63
1 to less than 2	3657	24.93	1265	11.32
2 to less than 5	4680	31.91	2879	25.77
5 to less than 10	1842	12.56	1648	14.75
10 to less than 32	1533	10.45	1762	15.77
32 to less than 64	447	3.05	742	6.64
1 to less than 10 caballerías	500	3.41	1670	14.95
10 to less than 20	44	0.30	212	1.90
20 to less than 50	16	0.11	71	0.64
50 to less than 100	7	0.05	49	0.44
100 to less than 200	1	0.01	2	0.02
200 caballerías y greater	3	0.02	354	3.17
Total	**14668**	**100.00**	**11171**	**100.00**

Wheat

Farm Size	Number of Farms	% of Total	Harvested Area	% of Total
Less than 1 manzana	4992	13.17	1537	3.48
1 to less than 2	8852	23.35	5404	12.23
2 to less than 5	12256	32.32	11939	27.03
5 to less than 10	7078	18.67	10957	24.80
10 to less than 32	4024	10.61	9846	22.29
32 to less than 64	472	1.24	2118	4.79
1 to less than 10 caballerías	236	0.62	2152	4.87
10 to less than 20	3	0.01	98	0.22
20 to less than 50	2	0.01	86	0.19
50 to less than 100	1	0.00	37	0.08
100 to less than 200	0	0.00	0	0.00
200 caballerías y greater	0	0.00	0	0.00
Total	**37916**	**100.00**	**44174**	**100.00**

Black Beans

Number of Farms	% of Total	Harvested Area	% of Total
7713	8.53	3005	2.83
22316	24.67	13396	12.60
32006	35.38	33478	31.49
14693	16.24	22168	20.85
9220	10.19	17700	16.65
2243	2.48	6065	5.70
1996	2.21	7581	7.13
158	0.17	1448	1.36
75	0.08	804	0.76
23	0.03	257	0.24
10	0.01	262	0.25
4	0.00	157	0.15
90457	**100.00**	**106321**	**100.00**

Sugar Cane

Number of Farms	% of Total	Harvested Area	% of Total
0	0.00	0	0.00
0	0.00	0	0.00
2354	29.65	858	3.88
1859	23.41	1166	5.28
1752	22.07	1954	8.84
699	8.80	1431	6.48
1054	13.27	5882	26.62
120	1.51	2789	12.62
80	1.01	2823	12.78
18	0.23	3473	15.72
4	0.05	1720	7.78
0	0.00	0	0.00
7940	**100.00**	**22096**	**100.00**

Millet

Farm Size	Number of Farms	% of Total	Harvested Area	% of Total
Less than 1 manzana	911	5.50	511	1.75
1 to less than 2	4107	24.80	4368	14.98
2 to less than 5	6378	38.52	10361	35.53
5 to less than 10	2279	13.76	4815	16.51
10 to less than 32	1891	11.42	4758	16.31
32 to less than 64	510	3.08	1570	5.38
1 to less than 10 caballerías	458	2.77	2128	7.30
10 to less than 20	15	0.09	94	0.32
20 to less than 50	8	0.05	557	1.91
50 to less than 100	1	0.01	1	0.00
100 to less than 200	1	0.01	1	0.00
200 caballerías y greater	0	0.00	0	0.00
Total	**16559**	**100.00**	**29164**	**100.00**

Broad Beans

Number of Farms	% of Total	Harvested Area	% of Total
5800	22.78	2407	8.43
6231	24.48	4714	16.51
7183	28.22	8725	30.57
3881	15.24	6495	22.75
2036	8.00	4369	15.31
216	0.85	926	3.24
104	0.41	835	2.93
3	0.01	27	0.09
3	0.01	41	0.14
1	0.00	6	0.02
0	0.00	0	0.00
0	0.00	0	0.00
25458	**100.00**	**28545**	**100.00**

Table A7: Composition of Output by Farm Size and Department (%)

(Source: Censo Agropecuario de 1950)

Guatemala	Coffee	Wheat	Bananas	Black Beans	Corn	Rice	Tobacco	Broad Beans	Millet	Sugar Cane	Total
Less than 1 manzana	0.0	0.0	0.0	14.1	81.9	0.0	2.6	0.8	0.7	0.0	**100.0**
1 to less than 2	0.0	0.0	0.0	12.8	79.0	0.0	6.2	0.4	1.6	0.0	**100.0**
2 to less than 5	0.4	0.0	0.2	14.0	64.6	0.0	18.8	0.3	1.6	0.1	**100.0**
5 to less than 10	2.3	0.0	0.3	14.4	54.3	0.0	26.2	0.3	1.5	0.6	**100.0**
10 to less than 32	19.9	0.0	0.3	10.0	40.1	0.0	20.9	0.2	1.1	7.6	**100.0**
32 to less than 64	28.6	0.0	1.6	6.5	31.4	0.0	19.0	0.1	0.5	12.3	**100.0**
1 to less than 10 caballerías	63.2	0.0	0.2	3.6	21.8	0.0	7.0	0.0	0.1	4.0	**100.0**
10 to less than 20	48.7	0.0	0.1	2.8	21.8	0.0	10.2	0.0	0.0	16.3	**100.0**
20 to less than 50	73.1	0.0	0.0	3.8	19.6	0.0	1.8	0.0	0.0	1.6	**100.0**
50 to less than 100	67.3	0.0	0.0	5.3	25.5	0.0	1.9	0.0	0.0	0.0	**100.0**
100 to less than 200	0.0	0.0	0.0	0.0	98.5	0.0	0.0	0.0	1.5	0.0	**100.0**
200 caballerías and greater	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	**0.0**
% of Total Production	**36.9**	**0.0**	**0.3**	**7.6**	**38.3**	**0.0**	**11.7**	**0.1**	**0.7**	**4.4**	**100.0**

El Progreso	Coffee	Wheat	Bananas	Black Beans	Corn	Rice	Tobacco	Broad Beans	Millet	Sugar Cane	Total
Less than 1 manzana	0.0	0.0	0.0	8.2	74.8	0.4	15.7	0.3	0.5	0.0	**100.0**
1 to less than 2	0.0	0.0	0.0	12.8	71.4	0.0	15.3	0.1	0.5	0.0	**100.0**
2 to less than 5	0.0	0.0	4.0	6.0	49.1	0.0	32.1	0.0	0.3	8.4	**100.0**
5 to less than 10	0.0	0.0	7.1	7.7	40.0	0.0	25.4	0.0	0.2	19.6	**100.0**
10 to less than 32	0.0	0.0	4.1	6.1	33.7	0.1	28.7	0.0	0.2	27.1	**100.0**
32 to less than 64	0.0	0.0	3.6	5.0	29.6	0.1	32.1	0.0	0.1	29.4	**100.0**
1 to less than 10 caballerías	3.1	0.0	2.6	7.4	26.4	0.0	19.2	0.0	0.0	41.3	**100.0**
10 to less than 20	0.0	0.0	0.1	3.0	22.8	0.0	32.7	0.0	0.0	41.3	**100.0**
20 to less than 50	0.0	0.0	0.0	7.0	46.0	0.0	36.4	0.0	0.1	10.5	**100.0**
50 to less than 100	74.8	0.0	0.0	0.9	3.8	0.0	2.3	0.0	0.0	18.2	**100.0**
100 to less than 200	0.0	0.0	0.0	21.7	78.3	0.0	0.0	0.0	0.0	0.0	**100.0**
200 caballerías and greater	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	**0.0**
% of Total Production	**2.2**	**0.0**	**3.4**	**6.9**	**37.1**	**0.0**	**25.1**	**0.0**	**0.2**	**25.0**	**100.0**

Sacatepéquez	Coffee	Wheat	Bananas	Black Beans	Corn	Rice	Tobacco	Broad Beans	Millet	Sugar Cane	Total
Less than 1 manzana	0.0	0.0	0.0	10.1	89.4	0.0	0.0	0.5	0.0	0.0	**100.0**
1 to less than 2	0.0	0.0	0.0	10.8	88.9	0.0	0.0	0.2	0.0	0.0	**100.0**
2 to less than 5	0.6	0.0	0.0	16.7	82.5	0.0	0.0	0.1	0.0	0.0	**100.0**
5 to less than 10	12.9	0.0	0.0	16.8	70.2	0.0	0.0	0.1	0.0	0.0	**100.0**
10 to less than 32	42.5	0.0	0.0	12.2	45.2	0.0	0.0	0.1	0.0	0.0	**100.0**
32 to less than 64	77.7	0.0	0.0	5.1	16.3	0.0	0.0	0.0	0.0	0.9	**100.0**
1 to less than 10 caballerías	82.8	0.0	0.0	1.9	7.1	0.0	0.0	0.0	0.0	8.2	**100.0**
10 to less than 20	93.2	0.0	0.0	3.2	3.6	0.0	0.0	0.0	0.0	0.0	**100.0**
20 to less than 50	63.6	0.0	0.0	0.0	1.9	0.0	0.0	0.0	0.0	34.5	**100.0**
50 to less than 100	0.0	0.0	0.0	0.0	0.0	0.0	0.0	99.6	0.4	0.0	**100.0**
100 to less than 200	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	100.0	0.0	**100.0**
200 caballerías and greater	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	**0.0**
% of Total Production	**48.9**	**0.0**	**0.0**	**8.2**	**38.8**	**0.0**	**0.0**	**0.1**	**0.0**	**4.0**	**100.0**

Chimaltenango	Coffee	Wheat	Bananas	Black Beans	Corn	Rice	Tobacco	Broad Beans	Millet	Sugar Cane	Total
Less than 1 manzana	0.0	1.8	0.0	7.5	81.0	0.0	0.1	9.6	0.0	0.0	**100.0**
1 to less than 2	0.0	4.1	0.0	10.0	81.3	0.0	0.2	4.3	0.0	0.0	**100.0**
2 to less than 5	0.0	1.8	0.0	1.5	96.2	0.0	0.1	0.3	0.0	0.1	**100.0**
5 to less than 10	0.5	19.4	0.0	10.8	66.1	0.0	0.5	2.0	0.0	0.7	**100.0**
10 to less than 32	7.8	20.4	0.0	10.7	57.9	0.0	0.5	1.4	0.0	1.2	**100.0**
32 to less than 64	9.8	20.2	0.0	11.5	53.9	0.0	0.8	0.7	0.0	3.0	**100.0**
1 to less than 10 caballerías	70.5	6.7	0.1	1.6	13.1	0.0	0.3	0.1	0.0	7.5	**100.0**
10 to less than 20	81.4	0.7	0.0	1.0	7.6	0.0	0.1	0.0	0.0	9.2	**100.0**
20 to less than 50	98.5	0.0	0.0	0.1	0.6	0.0	0.0	0.0	0.0	0.8	**100.0**
50 to less than 100	90.4	0.0	0.0	2.1	1.9	0.3	0.0	0.0	0.0	5.2	**100.0**
100 to less than 200	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	100.0	0.0	**100.0**
200 caballerías and greater	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	**0.0**
% of Total Production	**29.5**	**4.0**	**0.0**	**2.6**	**60.9**	**0.0**	**0.1**	**0.5**	**0.0**	**2.2**	**100.0**

Escuintla	Coffee	Wheat	Bananas	Black Beans	Corn	Rice	Tobacco	Broad Beans	Millet	Sugar Cane	Total
Less than 1 manzana	0.0	0.0	0.0	1.3	98.4	0.0	0.0	0.3	0.0	0.0	**100.0**
1 to less than 2	0.0	0.0	0.0	4.2	95.2	0.1	0.1	0.6	0.0	0.0	**100.0**
2 to less than 5	0.0	0.0	1.0	8.0	89.8	0.1	0.4	0.7	0.0	0.0	**100.0**
5 to less than 10	0.9	0.0	3.9	11.3	77.5	0.2	0.5	0.7	0.0	5.1	**100.0**
10 to less than 32	12.8	0.0	4.1	7.1	67.5	0.1	0.6	0.6	0.0	7.1	**100.0**
32 to less than 64	9.7	0.0	1.8	1.4	63.9	0.1	0.3	0.1	0.0	22.5	**100.0**
1 to less than 10 caballerías	30.4	0.0	5.4	0.6	26.7	0.0	0.1	0.0	0.0	36.8	**100.0**
10 to less than 20	26.0	0.0	22.9	0.5	14.5	0.1	0.1	0.0	0.0	35.9	**100.0**
20 to less than 50	41.7	0.0	3.2	0.8	19.1	0.0	0.0	0.0	0.0	35.1	**100.0**
50 to less than 100	38.0	0.0	0.7	0.0	6.5	0.0	0.0	0.0	0.0	54.8	**100.0**
100 to less than 200	49.2	0.0	0.0	0.0	2.8	0.0	0.0	0.0	0.0	48.0	**100.0**
200 caballerías and greater	0.0	0.0	99.7	0.0	0.3	0.0	0.0	0.0	0.0	0.0	**100.0**
% of Total Production	**23.2**	**0.0**	**30.3**	**0.9**	**18.6**	**0.0**	**0.0**	**0.1**	**0.0**	**26.9**	**100.0**

Santa Rosa	Coffee	Wheat	Bananas	Black Beans	Corn	Rice	Tobacco	Broad Beans	Millet	Sugar Cane	Total
Less than 1 manzana	0.0	0.0	0.0	15.1	78.5	4.3	0.6	0.4	1.1	0.0	**100.0**
1 to less than 2	0.0	0.0	0.0	22.1	70.5	5.4	0.7	0.1	1.2	0.0	**100.0**
2 to less than 5	0.5	0.1	0.5	29.4	50.0	7.5	2.6	0.1	1.5	7.8	**100.0**
5 to less than 10	8.9	0.1	0.7	11.3	42.1	6.5	3.6	0.1	1.4	25.3	**100.0**
10 to less than 32	26.7	0.1	0.9	6.8	29.6	3.9	2.6	0.0	0.9	28.5	**100.0**
32 to less than 64	41.5	0.0	0.3	4.1	22.6	2.7	2.1	0.0	0.4	26.1	**100.0**
1 to less than 10 caballerías	70.9	0.0	0.2	2.4	11.8	2.9	1.2	0.0	0.1	10.4	**100.0**
10 to less than 20	91.8	0.0	0.0	0.3	3.4	1.4	0.9	0.0	0.0	2.1	**100.0**
20 to less than 50	79.7	0.0	0.0	0.9	5.1	0.2	0.1	0.0	0.0	14.0	**100.0**
50 to less than 100	98.2	0.0	0.0	0.0	1.8	0.0	0.0	0.0	0.0	0.0	**100.0**
100 to less than 200	0.0	0.0	5.2	0.0	94.7	0.0	0.0	0.0	0.1	0.0	**100.0**
200 caballerías and greater	0.0	0.0	0.0	48.2	51.8	0.0	0.0	0.0	0.0	0.0	**100.0**
% of Total Production	**52.8**	**0.0**	**0.2**	**7.8**	**23.2**	**3.2**	**1.3**	**0.0**	**0.5**	**10.9**	**100.0**

Sololá	Coffee	Wheat	Bananas	Black Beans	Corn	Rice	Tobacco	Broad Beans	Millet	Sugar Cane	Total
Less than 1 manzana	0.0	18.2	0.0	9.8	63.6	0.0	0.0	8.4	0.0	0.0	**100.0**
1 to less than 2	0.0	21.4	0.0	9.3	64.4	0.0	0.1	4.8	0.0	0.0	**100.0**
2 to less than 5	0.9	19.9	0.4	9.6	65.2	0.1	0.3	3.6	0.0	0.0	**100.0**
5 to less than 10	2.2	28.3	0.2	9.0	55.2	0.1	0.4	4.8	0.0	0.0	**100.0**
10 to less than 32	23.8	20.4	0.0	10.0	41.2	0.0	0.5	4.0	0.0	0.0	**100.0**
32 to less than 64	46.4	17.2	0.0	6.6	25.3	0.0	1.2	3.2	0.0	0.0	**100.0**
1 to less than 10 caballerías	77.4	2.7	0.0	1.1	8.9	0.0	0.4	0.6	0.0	9.0	**100.0**
10 to less than 20	88.3	0.0	0.0	0.2	11.0	0.0	0.4	0.1	0.0	0.0	**100.0**
20 to less than 50	38.2	11.9	0.0	1.0	4.5	0.0	0.1	0.1	0.0	44.2	**100.0**
50 to less than 100	0.0	0.0	0.0	0.0	0.0	0.0	24.4	75.6	0.0	0.0	**100.0**
100 to less than 200	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	**0.0**
200 caballerías and greater	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	**0.0**
% of Total Production	**23.8**	**16.6**	**0.1**	**7.0**	**44.8**	**0.0**	**0.3**	**3.4**	**0.0**	**3.9**	**100.0**

Totonicapán	Coffee	Wheat	Bananas	Black Beans	Corn	Rice	Tobacco	Broad Beans	Millet	Sugar Cane	Total
Less than 1 manzana	0.0	23.2	0.0	5.4	62.0	0.0	0.0	9.3	0.0	0.0	**100.0**
1 to less than 2	0.0	39.4	0.0	3.9	45.6	0.0	0.1	11.0	0.0	0.0	**100.0**
2 to less than 5	0.0	46.2	0.0	2.4	34.2	0.0	0.8	16.4	0.0	0.0	**100.0**
5 to less than 10	0.0	43.2	0.0	2.3	30.6	0.0	1.2	22.7	0.0	0.0	**100.0**
10 to less than 32	0.0	35.3	0.0	3.8	28.7	0.0	2.5	29.7	0.0	0.0	**100.0**
32 to less than 64	0.0	48.3	0.0	3.6	19.9	0.0	5.4	22.7	0.0	0.0	**100.0**
1 to less than 10 caballerías	0.0	21.3	0.0	37.0	17.9	0.0	7.2	16.6	0.0	0.0	**100.0**
10 to less than 20	0.0	0.0	0.0	0.0	0.0	0.0	83.8	16.2	0.0	0.0	**100.0**
20 to less than 50	0.0	0.0	0.0	0.0	0.0	0.0	33.5	66.5	0.0	0.0	**100.0**
50 to less than 100	0.0	0.0	0.0	0.0	0.0	0.0	16.7	83.3	0.0	0.0	**100.0**
100 to less than 200	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	**0.0**
200 caballerías and greater	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	**0.0**
% of Total Production	**0.0**	**37.2**	**0.0**	**4.5**	**42.9**	**0.0**	**0.8**	**14.6**	**0.0**	**0.0**	**100.0**

Quezaltenango	Coffee	Wheat	Bananas	Black Beans	Corn	Rice	Tobacco	Broad Beans	Millet	Sugar Cane	Total
Less than 1 manzana	0.0	11.0	0.0	3.3	74.0	0.5	0.1	11.1	0.0	0.0	**100.0**
1 to less than 2	0.0	20.8	0.0	2.4	66.3	0.8	0.3	9.4	0.0	0.0	**100.0**
2 to less than 5	0.0	33.1	0.1	2.2	52.8	0.4	1.5	9.6	0.0	0.3	**100.0**
5 to less than 10	1.7	38.6	0.1	2.0	46.4	0.4	1.6	9.0	0.0	0.2	**100.0**
10 to less than 32	14.5	36.7	0.3	1.7	37.6	0.6	1.7	6.2	0.0	0.6	**100.0**
32 to less than 64	38.6	22.7	0.2	1.3	29.3	0.4	2.0	2.6	0.0	3.0	**100.0**
1 to less than 10 caballerías	89.0	1.9	0.5	0.3	3.8	0.1	0.4	0.2	0.0	3.8	**100.0**
10 to less than 20	73.7	0.0	2.0	0.2	17.5	0.3	0.8	0.0	0.0	5.4	**100.0**
20 to less than 50	91.0	0.0	0.3	0.1	4.6	0.0	0.1	0.1	0.0	3.9	**100.0**
50 to less than 100	74.4	0.0	0.0	0.0	18.8	0.0	0.0	0.0	0.0	6.8	**100.0**
100 to less than 200	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	100.0	0.0	**100.0**
200 caballerías and greater	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	**0.0**
% of Total Production	**54.3**	**12.0**	**0.4**	**1.0**	**25.1**	**0.3**	**0.7**	**3.5**	**0.0**	**2.7**	**100.0**

Suchitepéquez	Coffee	Wheat	Bananas	Black Beans	Corn	Rice	Tobacco	Broad Beans	Millet	Sugar Cane	Total
Less than 1 manzana	0.0	0.0	0.0	1.1	91.9	6.9	0.0	0.1	0.0	0.0	**100.0**
1 to less than 2	0.0	0.0	0.0	1.3	89.2	9.2	0.0	0.2	0.0	0.0	**100.0**
2 to less than 5	0.9	0.1	1.6	1.4	86.3	9.1	0.2	0.4	0.1	0.0	**100.0**
5 to less than 10	7.7	0.0	7.7	1.0	75.6	7.2	0.3	0.5	0.1	0.0	**100.0**
10 to less than 32	56.2	0.0	3.1	0.5	35.0	3.0	0.2	0.2	0.0	1.7	**100.0**
32 to less than 64	55.5	0.0	3.2	0.1	26.5	1.1	0.1	0.0	0.0	13.6	**100.0**
1 to less than 10 caballerías	83.9	0.0	2.0	0.5	6.0	0.1	0.0	0.0	0.0	7.5	**100.0**
10 to less than 20	63.0	0.0	15.0	0.0	2.9	0.1	0.0	0.0	0.0	19.0	**100.0**
20 to less than 50	73.5	0.0	3.0	0.0	16.1	0.0	0.0	0.0	0.0	7.3	**100.0**
50 to less than 100	86.4	0.0	0.0	0.0	13.6	0.0	0.0	0.0	0.0	0.0	**100.0**
100 to less than 200	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	100.0	0.0	**100.0**
200 caballerías and greater	0.0	0.0	28.8	0.0	0.0	71.2	0.0	0.0	0.0	0.0	**100.0**
% of Total Production	**66.7**	**0.0**	**5.6**	**0.3**	**16.5**	**1.3**	**0.0**	**0.0**	**0.0**	**9.5**	**100.0**

Retalhuleu	Coffee	Wheat	Bananas	Black Beans	Corn	Rice	Tobacco	Broad Beans	Millet	Sugar Cane	Total
Less than 1 manzana	0.0	0.0	0.0	2.7	93.5	3.6	0.0	0.1	0.0	0.0	**100.0**
1 to less than 2	0.0	0.0	0.0	1.2	94.9	3.8	0.0	0.1	0.0	0.0	**100.0**
2 to less than 5	0.0	0.0	0.6	0.8	94.9	2.9	0.3	0.1	0.0	0.4	**100.0**
5 to less than 10	0.0	0.0	0.7	1.1	87.7	4.7	0.7	0.2	0.0	4.9	**100.0**
10 to less than 32	12.4	0.3	0.7	1.3	77.4	4.3	0.8	0.1	0.0	2.7	**100.0**
32 to less than 64	69.5	0.0	0.8	0.1	25.5	1.0	0.3	0.0	0.0	2.8	**100.0**
1 to less than 10 caballerías	82.8	0.0	0.6	0.2	6.2	0.0	0.1	0.0	0.0	10.2	**100.0**
10 to less than 20	60.3	0.0	13.1	0.0	26.2	0.0	0.2	0.0	0.0	0.3	**100.0**
20 to less than 50	9.7	0.0	13.9	0.0	66.4	0.3	0.0	0.0	0.0	9.7	**100.0**
50 to less than 100	0.0	0.0	1.0	0.0	99.0	0.0	0.0	0.0	0.0	0.0	**100.0**
100 to less than 200	6.0	0.0	0.0	0.0	3.7	0.0	0.0	0.0	0.0	90.3	**100.0**
200 caballerías and greater	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	**0.0**
% of Total Production	**40.2**	**0.0**	**2.8**	**0.6**	**46.9**	**1.4**	**0.1**	**0.0**	**0.0**	**8.0**	**100.0**

San Marcos	Coffee	Wheat	Bananas	Black Beans	Corn	Rice	Tobacco	Broad Beans	Millet	Sugar Cane	Total
Less than 1 manzana	0.0	2.1	0.0	5.0	86.4	0.6	0.1	5.7	0.0	0.0	**100.0**
1 to less than 2	0.0	10.5	0.0	4.8	77.6	0.9	0.5	5.7	0.0	0.0	**100.0**
2 to less than 5	0.3	27.4	0.8	6.7	56.8	0.7	1.9	4.7	0.0	0.7	**100.0**
5 to less than 10	2.4	32.5	0.8	6.8	51.2	0.5	1.2	2.6	0.0	2.1	**100.0**
10 to less than 32	17.9	27.5	1.0	4.9	42.1	0.4	1.1	1.6	0.0	3.4	**100.0**
32 to less than 64	55.2	11.5	1.8	2.0	20.8	0.2	1.8	0.9	0.0	6.0	**100.0**
1 to less than 10 caballerías	92.2	0.7	0.3	0.5	3.7	0.0	0.4	0.1	0.0	2.0	**100.0**
10 to less than 20	96.1	0.0	0.1	0.1	3.1	0.0	0.3	0.0	0.0	0.2	**100.0**
20 to less than 50	96.0	0.0	2.6	0.0	0.6	0.0	0.1	0.0	0.0	0.6	**100.0**
50 to less than 100	0.0	0.0	0.0	0.0	0.0	0.0	62.9	37.1	0.0	0.0	**100.0**
100 to less than 200	100.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	**100.0**
200 caballerías and greater	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	**0.0**
% of Total Production	**59.9**	**9.4**	**0.6**	**2.4**	**23.8**	**0.2**	**0.7**	**1.4**	**0.0**	**1.5**	**100.0**

Huehuetenango	Coffee	Wheat	Bananas	Black Beans	Corn	Rice	Tobacco	Broad Beans	Millet	Sugar Cane	Total
Less than 1 manzana	0.0	6.3	0.0	5.6	84.0	0.0	0.3	3.8	0.0	0.0	**100.0**
1 to less than 2	0.0	8.7	0.0	6.0	83.6	0.0	0.5	1.2	0.0	0.0	**100.0**
2 to less than 5	0.1	10.1	0.1	6.1	77.9	0.0	1.3	0.7	0.0	3.5	**100.0**
5 to less than 10	0.2	14.9	0.2	6.8	71.3	0.0	1.3	0.6	0.0	4.7	**100.0**
10 to less than 32	2.7	15.7	0.2	5.9	65.9	0.1	1.6	0.5	0.0	7.4	**100.0**
32 to less than 64	10.6	9.3	1.3	5.5	60.3	0.0	3.1	0.3	0.0	9.6	**100.0**
1 to less than 10 caballerías	37.3	3.1	0.4	4.9	38.8	0.0	3.8	0.2	0.0	11.5	**100.0**
10 to less than 20	49.9	0.0	0.7	2.7	24.5	0.0	8.5	0.0	0.0	13.6	**100.0**
20 to less than 50	27.2	0.5	0.5	2.8	50.9	0.0	2.2	0.1	0.0	15.9	**100.0**
50 to less than 100	0.0	6.8	0.0	0.0	90.4	0.0	0.3	0.0	0.0	2.5	**100.0**
100 to less than 200	0.0	0.0	0.0	2.2	97.8	0.0	0.0	0.0	0.0	0.0	**100.0**
200 caballerías y greater	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	**0.0**
% of Total Production	**5.4**	**10.8**	**0.2**	**5.9**	**70.2**	**0.0**	**1.6**	**0.7**	**0.0**	**5.1**	**100.0**

El Quiche	Coffee	Wheat	Bananas	Black Beans	Corn	Rice	Tobacco	Broad Beans	Millet	Sugar Cane	Total
Less than 1 manzana	0.0	0.4	0.0	16.3	80.0	0.0	0.3	2.6	0.4	0.0	**100.0**
1 to less than 2	0.0	1.3	0.0	13.6	82.7	0.0	0.6	1.1	0.7	0.0	**100.0**
2 to less than 5	0.0	2.3	0.0	10.6	81.8	0.0	1.6	0.6	0.7	2.4	**100.0**
5 to less than 10	0.0	2.6	0.0	10.4	80.2	0.0	1.6	0.6	0.4	4.3	**100.0**
10 to less than 32	0.0	1.6	0.0	7.8	79.7	0.0	1.6	0.4	0.4	8.6	**100.0**
32 to less than 64	0.0	1.0	0.3	9.1	67.9	0.0	2.5	0.2	0.3	18.6	**100.0**
1 to less than 10 caballerías	13.1	0.5	0.1	6.6	51.5	0.0	5.1	0.2	0.4	22.6	**100.0**
10 to less than 20	15.6	0.0	0.4	2.9	59.4	0.0	11.4	0.0	0.2	10.1	**100.0**
20 to less than 50	82.4	0.0	0.0	1.1	12.8	0.0	0.2	0.0	0.0	3.5	**100.0**
50 to less than 100	0.0	0.0	0.0	3.0	96.4	0.0	0.6	0.1	0.0	0.0	**100.0**
100 to less than 200	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	100.0	0.0	**100.0**
200 caballerías y greater	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	**0.0**
% of Total Production	**8.9**	**1.6**	**0.0**	**9.2**	**71.4**	**0.0**	**1.7**	**0.6**	**0.5**	**6.1**	**100.0**

Baja Verapaz	Coffee	Wheat	Bananas	Black Beans	Corn	Rice	Tobacco	Broad Beans	Millet	Sugar Cane	Total
Less than 1 manzana	0.0	0.0	0.0	8.0	82.3	0.2	0.0	0.2	9.3	0.0	**100.0**
1 to less than 2	0.0	0.0	0.0	10.3	80.5	0.1	0.0	0.0	9.0	0.0	**100.0**
2 to less than 5	0.0	0.0	0.0	11.3	73.5	0.1	0.0	0.0	7.8	7.2	**100.0**
5 to less than 10	0.0	0.0	0.0	9.6	68.4	0.1	0.0	0.0	6.2	15.7	**100.0**
10 to less than 32	0.6	0.0	0.0	9.2	67.6	0.1	0.0	0.0	5.1	17.5	**100.0**
32 to less than 64	0.0	0.5	0.0	13.1	54.2	0.4	0.0	0.0	3.8	28.0	**100.0**
1 to less than 10 caballerías	24.4	0.0	0.0	3.4	38.5	0.3	0.0	0.0	2.0	31.4	**100.0**
10 to less than 20	60.9	0.0	0.0	1.5	21.1	0.2	0.0	0.0	1.5	14.8	**100.0**
20 to less than 50	80.3	0.0	0.0	0.5	8.6	0.0	0.0	0.0	0.1	10.4	**100.0**
50 to less than 100	53.3	0.0	0.0	11.0	31.4	0.0	0.0	0.0	0.0	4.3	**100.0**
100 to less than 200	100.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	**100.0**
200 caballerías and greater	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	**0.0**
% of Total Production	**18.5**	**0.0**	**0.0**	**8.0**	**54.8**	**0.1**	**0.0**	**0.0**	**4.7**	**13.8**	**100.0**

Alta Verapaz	Coffee	Wheat	Bananas	Black Beans	Corn	Rice	Tobacco	Broad Beans	Millet	Sugar Cane	Total
Less than 1 manzana	0.0	0.0	0.0	11.8	87.3	0.0	0.0	0.8	0.0	0.0	**100.0**
1 to less than 2	0.0	0.0	0.0	11.3	88.5	0.0	0.0	0.1	0.0	0.0	**100.0**
2 to less than 5	0.0	0.0	0.1	10.0	87.9	0.0	0.1	0.1	0.0	1.7	**100.0**
5 to less than 10	0.0	0.0	0.2	8.7	87.9	0.0	0.2	0.1	0.0	2.9	**100.0**
10 to less than 32	0.5	0.0	0.3	9.1	86.1	0.0	0.2	0.1	0.0	3.6	**100.0**
32 to less than 64	4.2	0.0	1.9	7.4	74.3	0.0	0.5	0.1	0.0	11.6	**100.0**
1 to less than 10 caballerías	54.1	0.0	0.0	3.4	32.8	0.1	0.3	0.0	0.0	9.2	**100.0**
10 to less than 20	74.2	0.0	0.0	1.9	22.6	0.2	0.1	0.0	0.0	0.9	**100.0**
20 to less than 50	49.1	0.0	0.0	10.4	35.7	0.2	0.0	0.0	0.0	4.6	**100.0**
50 to less than 100	93.3	0.0	0.2	0.3	5.5	0.0	0.0	0.0	0.0	0.7	**100.0**
100 to less than 200	44.2	0.0	0.0	3.1	52.6	0.0	0.0	0.0	0.0	0.0	**100.0**
200 caballerías and greater	77.7	0.0	0.0	0.7	21.3	0.2	0.0	0.0	0.0	0.0	**100.0**
% of Total Production	**36.0**	**0.0**	**0.1**	**6.4**	**54.9**	**0.1**	**0.1**	**0.1**	**0.0**	**2.2**	**100.0**

El Petén	Coffee	Wheat	Bananas	Black Beans	Corn	Rice	Tobacco	Broad Beans	Millet	Sugar Cane	Total
Less than 1 manzana	0.0	0.0	0.0	30.6	68.8	0.0	0.0	0.6	0.0	0.0	**100.0**
1 to less than 2	0.0	0.0	0.0	13.7	85.9	0.3	0.0	0.1	0.0	0.0	**100.0**
2 to less than 5	0.0	0.0	1.1	12.5	80.6	0.3	0.0	0.0	0.0	5.6	**100.0**
5 to less than 10	0.0	0.0	1.1	10.8	79.7	0.1	0.0	0.0	0.0	8.3	**100.0**
10 to less than 32	0.0	0.0	0.6	14.6	77.5	0.0	0.0	0.0	0.0	7.2	**100.0**
32 to less than 64	0.0	0.0	1.9	14.5	73.4	0.3	0.0	0.0	0.0	9.9	**100.0**
1 to less than 10 caballerías	0.0	0.0	0.3	10.7	87.0	0.1	0.0	0.0	0.0	1.8	**100.0**
10 to less than 20	0.0	0.0	0.0	1.9	98.1	0.0	0.0	0.0	0.0	0.0	**100.0**
20 to less than 50	0.0	0.0	41.5	0.0	0.0	0.0	0.0	0.0	0.0	58.5	**100.0**
50 to less than 100	0.0	0.0	0.0	0.0	0.0	0.0	0.0	98.2	1.8	0.0	**100.0**
100 to less than 200	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	100.0	0.0	**100.0**
200 caballerías and greater	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	**0.0**
% of Total Production	**0.0**	**0.0**	**1.0**	**12.2**	**80.3**	**0.1**	**0.0**	**0.0**	**0.0**	**6.4**	**100.0**

Izabal	Coffee	Wheat	Bananas	Black Beans	Corn	Rice	Tobacco	Broad Beans	Millet	Sugar Cane	Total
Less than 1 manzana	0.0	0.0	0.0	18.4	80.8	0.0	0.1	0.7	0.0	0.0	**100.0**
1 to less than 2	0.0	0.0	0.0	20.6	78.2	0.2	0.4	0.5	0.0	0.0	**100.0**
2 to less than 5	0.0	0.1	2.6	13.2	82.9	0.4	0.8	0.2	0.0	0.0	**100.0**
5 to less than 10	0.0	0.0	8.8	12.3	77.5	0.3	0.8	0.2	0.0	0.0	**100.0**
10 to less than 32	0.0	0.0	10.4	11.7	76.0	0.3	1.5	0.2	0.0	0.0	**100.0**
32 to less than 64	0.0	0.0	13.7	21.8	59.4	0.9	3.9	0.2	0.0	0.0	**100.0**
1 to less than 10 caballerías	0.0	0.0	66.3	5.2	24.5	0.1	3.7	0.1	0.0	0.0	**100.0**
10 to less than 20	0.0	0.0	3.2	53.1	40.2	0.7	2.8	0.0	0.0	0.0	**100.0**
20 to less than 50	0.0	0.0	6.8	5.5	86.0	0.3	1.4	0.0	0.0	0.0	**100.0**
50 to less than 100	48.3	0.0	0.0	1.5	48.7	0.4	0.0	0.0	0.0	1.0	**100.0**
100 to less than 200	0.0	0.0	0.0	2.6	97.4	0.0	0.0	0.0	0.0	0.0	**100.0**
200 caballerías and greater	0.0	0.0	100.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	**100.0**
% of Total Production	**1.5**	**0.0**	**39.3**	**9.2**	**48.9**	**0.2**	**0.7**	**0.2**	**0.0**	**0.0**	**100.0**

Zacapa	Coffee	Wheat	Bananas	Black Beans	Corn	Rice	Tobacco	Broad Beans	Millet	Sugar Cane	Total
Less than 1 manzana	0.0	0.0	0.0	14.1	76.8	0.0	7.7	0.6	0.7	0.0	**100.0**
1 to less than 2	0.0	0.0	0.0	20.6	71.5	1.0	6.2	0.1	0.6	0.0	**100.0**
2 to less than 5	0.0	0.0	0.3	17.6	58.6	0.5	17.7	0.1	0.6	4.7	**100.0**
5 to less than 10	0.0	0.0	1.1	14.4	52.9	0.9	19.2	0.1	0.4	11.1	**100.0**
10 to less than 32	0.5	0.0	1.7	14.8	45.0	0.6	14.7	0.0	0.3	22.3	**100.0**
32 to less than 64	7.2	0.0	0.4	12.7	46.9	0.8	10.8	0.0	0.1	20.9	**100.0**
1 to less than 10 caballerías	5.1	0.0	0.2	9.5	38.1	0.2	13.6	0.0	0.1	33.3	**100.0**
10 to less than 20	8.5	0.0	0.0	5.4	38.4	0.3	19.5	0.0	0.0	27.9	**100.0**
20 to less than 50	70.0	0.0	0.0	4.5	21.3	0.0	2.6	0.0	0.0	1.5	**100.0**
50 to less than 100	88.5	0.0	0.0	0.0	11.2	0.1	0.2	0.0	0.0	0.0	**100.0**
100 to less than 200	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	100.0	0.0	**100.0**
200 caballerías and greater	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	**0.0**
% of Total Production	**13.6**	**0.0**	**0.5**	**12.2**	**44.9**	**0.5**	**12.6**	**0.0**	**0.3**	**15.4**	**100.0**

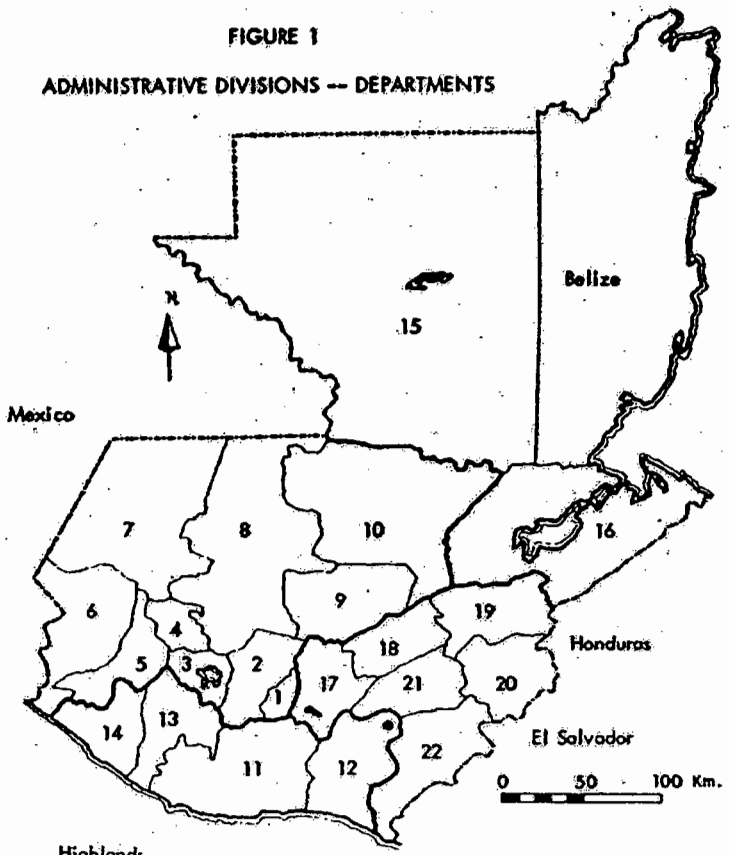
Chiquimula	Coffee	Wheat	Bananas	Black Beans	Corn	Rice	Tobacco	Broad Beans	Millet	Sugar Cane	Total
Less than 1 manzana	0.0	0.0	0.0	16.8	68.7	0.1	7.5	0.9	6.0	0.0	**100.0**
1 to less than 2	0.0	0.0	0.0	20.5	69.1	0.3	5.5	0.2	4.5	0.0	**100.0**
2 to less than 5	0.0	0.0	2.7	17.7	52.7	0.7	17.3	0.1	4.8	4.1	**100.0**
5 to less than 10	0.0	0.0	2.8	18.7	41.4	0.9	23.3	0.1	4.3	8.4	**100.0**
10 to less than 32	0.3	0.0	4.1	16.4	36.8	1.0	24.8	0.1	4.2	12.4	**100.0**
32 to less than 64	0.0	0.0	3.2	16.4	28.9	1.0	31.2	0.0	2.8	16.5	**100.0**
1 to less than 10 caballerías	4.6	0.0	1.6	10.4	20.7	1.9	41.3	0.0	2.1	17.4	**100.0**
10 to less than 20	2.4	0.0	0.5	5.8	11.3	0.9	76.0	0.0	0.8	2.3	**100.0**
20 to less than 50	0.0	0.0	0.0	0.0	0.0	0.0	95.2	0.1	4.7	0.0	**100.0**
50 to less than 100	0.0	0.0	0.0	0.0	0.0	0.0	99.3	0.1	0.6	0.0	**100.0**
100 to less than 200	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	100.0	0.0	**100.0**
200 caballerías and greater	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	**0.0**
% of Total Production	**0.6**	**0.0**	**2.3**	**16.8**	**45.2**	**0.8**	**22.5**	**0.1**	**4.0**	**7.6**	**100.0**

Jalapa	Coffee	Wheat	Bananas	Black Beans	Corn	Rice	Tobacco	Broad Beans	Millet	Sugar Cane	Total
Less than 1 manzana	0.0	0.0	0.0	20.6	68.9	0.2	7.2	1.8	1.4	0.0	**100.0**
1 to less than 2	0.0	0.1	0.0	22.8	68.3	0.3	6.8	0.4	1.3	0.0	**100.0**
2 to less than 5	0.0	0.5	0.6	19.9	63.2	1.7	12.0	0.1	0.8	1.2	**100.0**
5 to less than 10	0.0	0.8	1.3	14.8	65.0	1.8	13.7	0.1	0.6	1.8	**100.0**
10 to less than 32	0.0	2.2	1.5	11.7	58.7	0.8	18.0	0.1	0.7	6.1	**100.0**
32 to less than 64	0.9	1.4	0.6	10.1	43.1	1.7	22.2	0.1	0.5	19.4	**100.0**
1 to less than 10 caballerías	1.4	0.0	0.4	9.2	43.4	1.8	26.3	0.0	0.3	17.1	**100.0**
10 to less than 20	4.2	0.0	0.0	4.2	18.0	0.2	45.9	0.0	0.1	27.4	**100.0**
20 to less than 50	29.2	0.0	1.1	10.0	21.2	0.0	14.8	0.0	0.2	23.5	**100.0**
50 to less than 100	0.0	0.0	0.0	0.0	0.0	0.0	99.6	0.3	0.1	0.0	**100.0**
100 to less than 200	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	100.0	0.0	**100.0**
200 caballerías and greater	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	**0.0**
% of Total Production	**0.8**	**0.8**	**0.8**	**15.4**	**57.7**	**1.4**	**16.2**	**0.2**	**0.7**	**6.2**	**100.0**

Jutiapa	Coffee	Wheat	Bananas	Black Beans	Corn	Rice	Tobacco	Broad Beans	Millet	Sugar Cane	Total
Less than 1 manzana	0.0	0.0	0.0	14.0	51.2	3.3	6.7	0.8	23.9	0.0	**100.0**
1 to less than 2	0.0	0.0	0.0	19.5	50.7	3.8	5.6	0.2	20.2	0.0	**100.0**
2 to less than 5	0.0	0.0	0.4	23.6	43.0	6.3	11.7	0.1	14.2	0.7	**100.0**
5 to less than 10	0.3	0.1	0.5	25.2	39.3	7.0	14.2	0.1	11.5	1.7	**100.0**
10 to less than 32	0.6	0.0	1.6	21.7	36.3	7.2	16.2	0.1	12.1	4.2	**100.0**
32 to less than 64	3.3	0.0	3.1	18.2	32.0	6.4	22.0	0.0	8.7	6.3	**100.0**
1 to less than 10 caballerías	3.2	0.0	0.8	12.9	29.0	5.6	28.6	0.0	6.5	13.3	**100.0**
10 to less than 20	33.3	0.0	0.1	4.4	7.9	1.1	41.3	0.0	1.9	10.0	**100.0**
20 to less than 50	27.2	0.0	0.0	0.6	8.7	2.7	35.1	0.0	7.7	18.0	**100.0**
50 to less than 100	0.0	0.0	0.0	5.1	76.1	4.2	14.2	0.0	0.4	0.0	**100.0**
100 to less than 200	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	100.0	0.0	**100.0**
200 caballerías and greater	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	**0.0**
% of Total Production	**1.8**	**0.0**	**0.8**	**20.7**	**38.8**	**6.0**	**15.8**	**0.1**	**12.5**	**3.6**	**100.0**

FIGURE 1

ADMINISTRATIVE DIVISIONS -- DEPARTMENTS



Highlands

1 Sacatepéquez
2 Chimaltenango
3 Sololá
4 Totonicapán
5 Quezaltenango
6 San Marcos
7 Huehuetenango
8 Quiché
9 Baja Verapaz
10 Alta Verapaz

Lowlands

11 Escuintla
12 Santa Rosa
13 Suchitepéquez
14 Retalhuleu
15 Peten
16 Izabal

East

17 Guatemala
18 El Progreso
19 Zacapa
20 Chiquimula
21 Jalapa
22 Jutiapa