AGENCY FOR INTERNATIONAL DEVELOPMENT
WASHINGTON, D. C. 20523

BIBLIOGRAPHIC INPUT SHEET

FOR AID USE ONLY
BATCH #16

1. SUBJECT CLASSIFICATION

A. PRIMARY
Agriculture — AE10-0000-G356

B. SECONDARY
Agricultural economics--Guatemala

2. TITLE AND SUBTITLE
The produ ctivity of agricultural labor in the export crops of Guatemala: its relation to wages and living conditions

3. AUTHOR(S)
Schmid,Lester

4. DOCUMENT DATE	5. NUMBER OF PAGES	6. ARC NUMBER
1968	20p.	ARC GT331.763.S348

7. REFERENCE ORGANIZATION NAME AND ADDRESS
Wis.

8. SUPPLEMENTARY NOTES *(Sponsoring Organization, Publishers, Availability)*
(In Land Tenure Center paper no.47)

9. ABSTRACT

10. CONTROL NUMBER	11. PRICE OF DOCUMENT
PN-RAA- 815	
12. DESCRIPTORS	**13. PROJECT NUMBER**
Guatemala Manpower utilization Productivity	**14. CONTRACT NUMBER** Repas-3 Res.
	15. TYPE OF DOCUMENT

AID 590-1 (4-74)

Repro - 3

LTC P

July 1968

LTC No. 47

THE LAND TENURE CENTER
310 King Hall
University of Wisconsin
Madison, Wisconsin 53706

THE PRODUCTIVITY OF AGRICULTURAL LABOR IN THE EXPORT CROPS OF GUATEMALA: ITS RELATION TO WAGES AND LIVING CONDITIONS

BY

LESTER SCHMID

This paper is being submitted for journal publication. The author is assistant professor of agricultural economics, Land Tenure Center, University of Wisconsin.

THE PRODUCTIVITY OF AGRICULTURAL LABOR IN THE EXPORT CROPS OF GUATEMALA: ITS RELATION TO WAGES AND LIVING CONDITIONS*

by

Lester Schmid**

Introduction

It appears, from the evidence available, that comparatively high wages and good living conditions for farm workers in Guatemala are accompanied by higher labor productivity. This being so, farm owners would be likely to profit from paying higher wages and providing better living conditions for their workers. Such a policy would benefit the workers, and at the same time make the farm more profitable.

Cotton, coffee, and sugar cane farms are very important to Guatemala as sources of employment. Besides furnishing year-round employment for 80,000 to 90,000 persons, these farms provide employment to about 200,000 seasonal workers.[1] This means that about one

---

*This research was sponsored by the Land Tenure Center. The LTC is a cooperative program of the American Nations, the Agency for International Development, and the University of Wisconsin. All views, interpretations, recommendations, and conclusions expressed in this paper are those of the author and not necessarily those of the supporting or cooperating organizations.

**Assistant professor of agricultural economics, University of Wisconsin, doing research for the Land Tenure Center in Guatemala. In Guatemala, he is associated with the University of San Carlos in Guatemala City. The author wishes to express his debt to Mr. Leonard H. Rhodes, economic advisor to the AID mission in Guatemala, and to Mr. Roberto Guirola, well-known Guatemalan farmer and elder statesman, for many of the ideas expressed in this paper.

[1] Lester Schmid, "The Role of Migratory Labor in the Economic Development of Guatemala." Unpublished Ph.D. thesis, University of Wisconsin, 1967.

and one-half million persons are directly affected by this type of employment, assuming that each employed person supports an average of four other family members.

Wages are low on Guatemalan farms at present, as they are throughout the economy. According to a recent study of agricultural migratory work in Guatemala, earnings per family, including the value of rations, averaged $ .75 per day on coffee farms, $ .86 on sugar cane farms, and $1.18 on cotton farms.[2] These wages are scarcely sufficient to provide the essentials of food and clothing for the families of the workers. It is likely that workers who are inadequately clothed and fed will be relatively unproductive.

Employers of farm labor in Guatemala claim that the wages they pay their workers are the highest in the world because the productivity of the workers is lower than in any other country; therefore, the cost of labor per unit of production is high. Without objective evidence concerning the performance of farm workers of other countries to use for a comparison, it is difficult to assess the claims of these employers. However, it is likely that the farm workers of Guatemala are relatively unproductive.

The present circle of low wages and low productivity can best be understood by a review of the historical development of the employment of the indigenous population on the large farms which were established by Europeans in Guatemala. From the days of the conquest until recently,

---

[2] Ibid. All value expressions are in U.S. dollars. (The quetzal is exactly equal to the dollar.)

many Indians were forced to migrate to the large farms to work, whether they wished to or not. The liberal regime of Justo Rufino Barrios took away much of the community land of the Indians as a means of forcing them to seek work on large coffee farms. Since the supply of workers was still not sufficient, other devices were used, including armed force, debt peonage by which the Indians were encouraged to acquire debts which were then passed down from father to son, and vagrancy laws by which all persons not cultivating sufficient land were declared vagrants and forced to work on the large farms.

There was no need to pay high wages, since non-economic forces were used to persuade workers to engage in work on the fincas (large farms). Even where economic forces did operate, most employers believed that higher wages would tend to reduce the length of time the Indians would work, since they could then pay their debts or make necessary purchases with less work. Living conditions were poor, since good living conditions were not considered necessary to attract workers.

At present, the main incentive for small farmers to seek work on the large farms is the need for additional income. Population increase in the highlands region has caused fragmentation of land holdings, so that the amount of arable land available to each family is now extremely small. Awareness of the need for more income has caused the workers to react positively to increases in wage rates. It appears, then, that the motives of Indian workers have changed considerably in recent years.

In spite of these changes, however, the present attitudes of both workers and employers reflect the past history of farm employment.

The bad reputation of the coastal areas where the large farms are located still persists, and workers believe that they will die from one of the diseases that are prevalent in these areas. Each case of malaria or insecticide poisoning suffered by the workers reinforces this belief. The employers regard the workers as unresponsive to economic stimuli, as many are reluctant to spend more than 30 to 60 days in employment on the coast. Many employers are reluctant to pay higher wages, fearing that the workers will work a shorter length of time if they do so. Thus, the circle of low wages and low productivity persists.

The important question is how this circle can be broken. Observation of weighing and measuring operations of the coffee and cotton picked indicated that individual differences in the amount of work accomplished are quite large. A few individuals in both coffee and cotton harvest are able to pick double the average amount per day. It would be interesting to know whether differences in health, in motivation, or in other personal characteristics are responsible for the greater work capacity of some individuals. However, since highly productive individuals are rare, it might be more fruitful to consider the differences in management of the farm and treatment of the workers that may have contributed to a higher labor productivity on some farms.

Myint[3] and Barber[4] have observed that employers in African countries did not have incentives to invest in training or physical

---

[3]Hla Myint, The Economics of the Developing Countries, New York: Praeger, 1961.

[4]William Barber, The Economy of British Central Africa, Stanford, California: Stanford University Press, p. 184.

welfare of the workers since the workers entered into the wage economy for only a few years at a time, or seasonally, and then returned to subsistence agriculture. In view of this statement, it is understandable that the employers of migrant workers in Guatemala would be reluctant to make investments on behalf of the workers who work for as little as 30 or 60 days per year, and seldom return to the same farm year after year.

It seems likely, however, that some employers are more successful than others in breaking the circle of low productivity and low wages, since some farms appear to have a considerably higher labor efficiency than others.

The Evidence

An effort was made to relate certain labor and cultural practices to the crude estimates of the amount of labor hired. One of the traditional ways of calculating the amount of labor needed to produce coffee was in terms of man-days of labor per quintal of coffee en oro, that is, ready for shipment. Higbee,[5] for example, observed that it took 12 to 18 man-days to produce 100 pounds of coffee en oro in the more favorable coffee producing areas of Guatemala, as compared to two to three times this amount in the Verapaces, where only the extremely low wage rates enabled the farms of this area to compete with other areas. The estimate of 14 man-days per quintal (100 pounds)

---

[5]E.C. Higbee, "Las Regiones Agrícolas de Guatemala," Economía de Guatemala, Guatemala: Seminario de Integración Social Guatemalteca, Ministerio de Educación Pública, 1959.

made in 1965 by a farm owner in one of the more favorable areas agrees with Higbee's estimate.

Using the estimates of amounts of labor used and estimates of yields which were given by the administrators, the number of man-days required to produce 100 pounds of coffee en oro was calculated. One farm was eliminated, as there appeared to be discrepancies both in in estimates of production and in level of wages. The 18 remaining farms were placed in three groups: five farms requiring from 9.4 to 13 man-days, seven farms from 16 to 19, and six farms requiring from 25 to 30 man-days to produce the same amount of coffee. Averages of man-days per quintal, production per hectare, wages, etc., were calculated for each of these three groups. As the one national finca and the one finca belonging to the National Agrarian Bank were required to pay $0.80 per day, the average for the third group (which contained these two farms) was computed separately from the other four farms in this group.

As shown in Table 1, the production per hectare was inversely related to the number of man-days required per quintal of coffee; in other words, higher production was related to lower labor requirements. The average yield of coffee per hectare in Guatemala in 1965-66 was 13.5 quintales, while some fincas were producing over 30 quintales per hectare. Even allowing for soil and climatic differences, this would seem to indicate that there is substantial room for improvement of per hectare yield on a majority of coffee farms.[6]

---

[6]Data gathered by Klaus Berg, FAO economist, indicates that management is far more important in yield than soils or climate.

Table 1. Relationship of Efficiency of Labor to Labor Cost, Coffee Yields, Wages, and Number of Persons Per Dwelling.

Groups	Man-days per 100 lbs. Coffee en oro	Cost of Labor per 100 lbs. Coffee en oro	Product per hectare in qq.	Wages and Perquisites per tarea			Number of Workers per Dwelling
				Cuad.	Volunt.	Colonos	
First	11.0	$ 9.91	21.6	$ .815	$ .817	$ .774	18
Second	18.1	13.00	17.8	.824	.761	.735	55
Third excluding national	27.3	12.34	13.1	.695	.600	.670	78
Third including national fincas	28.6	21.11	13.9	.761	.666	.691	103

Wages and perquisites paid to colonos[7] were slightly higher on the farms with the higher yields. More farms in the third group furnished land to the colonos; however, when calculated at the rental value of $30 per hectare, the addition of the value of these small parcels was too small to influence the results. Wages and rations paid to cuadrilleros[8] were nearly equal for the first two groups and definitely lower for the third group. Wages paid to voluntarios[9] were highest for the first group and lowest for the third group.

[7] Colonos are year round workers.

[8] Cuadrilleros are seasonal workers who work under a contract.

[9] Voluntarios are seasonal workers who do not work under a contract.

Labor costs per 100 pounds of coffee en oro were $9.91 for the first group, $13.00 for the second group, and $21.11 for the third group. However, when the four private fincas in the third group are considered separately, it appears that the lower wages paid by these fincas overcame the effects of lower labor efficiency and reduced the cost of production per unit to slightly below that in the second group, but not as low as in the first group. There was a tendency for the farms in the first group to house the fewest and for the third group to house the most migratory workers per dwelling.[10]

From the foregoing it appears that, on the coffee fincas, there are three factors that have affected labor efficiency: production per hectare, which is the most obvious; level of wages paid; and the number of workers housed per dwelling. Other factors appeared to have little effect upon labor efficiency.

For the cotton fincas the number of man-days per quintal of cotton en rama was also computed. These 16 farms were divided into two groups of eight farms each. The group with the higher labor efficiency had a slightly higher production per hectare than the other group. Wages for colonos were practically the same for the two groups, being somewhat less for the more efficient group. However, there appeared to be a considerable difference in the wages paid to cuadrilleros and voluntarios in favor of the first group. Since

---

[10]The number of persons housed per dwelling was used as a rough indication of the living conditions on the finca.

the cost of labor per 100 pounds of raw cotton was much lower for the first group, it appears that the fincas that paid the highest wages to the cuadrilleros and voluntarios had a labor efficiency sufficiently high to offset these higher wage payments. As with the coffee farms, the group with the highest efficiency housed the fewest workers in each building, although the difference was not as great (see Table 2).

Table 2. Relationship of Efficiency of Labor to Labor Cost, Cotton Yields, Wages, and Number of Persons Per Dwelling.

	Man-days per 100 lbs. Cotton en rama*	Cost of Labor per 100 lbs. Cotton en rama	Product per Hectare in qq.	Wages and Perquisites per tarea			Number of Workers per Dwelling
				Cuad.	Volunt.	Colonos	
First	1.56	$1.83	59.2	$1.29	$1.36	$0.98	59
Second	3.41	2.62	52.3	1.02	1.22	1.15	87

*Indicates unginned or raw cotton.

Discussion

There are several practices that finca owners have said were used to provide the workers with incentives to work harder, to improve their working abilities, or to promote good will toward the finca administration. Some of these practices apply more directly to colonos than to seasonal workers, but will be mentioned here. These practices can be classified as: (1) payment practices; (2) measures to improve health and education of the workers; (3) transportation of workers and products within the finca; (4) help in

production on plots of colonos; (5) morale raising measures; and (6) measures to promote the consumption of purchased articles.

As already discussed, higher wages seemed to be associated with higher labor efficiency. One farm owner suggested that paying for the correct weight of product picked would avoid the resentment of the workers, which may be a factor in low labor efficiency. Another finca owner said that the workers preferred to be paid every two weeks, since they spend about the same amount each payday for liquor; if paid every two weeks they would have more money left to buy necessities for themselves and their families. Another farm owner said the workers' wives preferred that they be paid on Tuesday, since the men would then spend less for liquor than if paid on Saturday.

There are some finca owners who believe that improved living conditions of the workers will result in higher productivity. This attitude was expressed by one coffee finca owner who was constructing for the colonos new houses with ventilation, running water, and electric lights. He said, "The spiritual and material well-being of the worker is basic when progress in yield of a finca is desired."[11]

Toledo[12] reported one cotton farmer as saying that construction o adequate housing, the installation of public services, and the improvement of labor conditions had resulted in higher productivity on the

---

[11] Miguel Villegas Rodas, Mi Lucha por el Café de Guatemala, Guatemala: Tipográfica Nacional, 1965, p. 178. Prensa Libre early in 1967 published a letter from the workers of this farm asking the leftist group not to kill their administrator.

[12] José López Toledo, Estudio Geográfico: Champerico, Guatemala: Dirección General de Obras Públicas, October 1966.

part of workers and higher profits for himself. If the number of finca owners who think this way can be increased, both the welfare of the workers and their production may be improved.

The food supplied on farms consists largely of tortillas and a small amount of beans. While there did not appear to be a great deal of difference between the diet of the workers in their home communities and on the fincas, the diet in the home communities was probably supplemented by foods that did not appear in the data, since they are not eaten regularly. A few fincas provided Incaparina;[13] a few provided milk for the children; and a few provided more liberal amounts of beans than the average. On some farms, meat was available for purchase by the workers, and on others the picking of fruit was permitted. These measures were thought by owners or administrators to help improve labor efficiency by improving the nutrition and health of the workers and their families.

Some finca owners provided good housing, potable water, and sanitation facilities to maintain the good health of the workers. On one farm, films explaining the need for sanitation were shown, but with little success. Some fincas have a medical clinic with a nurse on duty throughout the week, and are visited weekly or monthly by a doctor.

In order to improve the education of the workers and their children, some fincas supplied schools with classes for children during

---

[13] A high protein, low cost food produced by the Instituto de Nutrición para Centro América y Panamá, known as INCAP.

the day and adults in the evening. On some fincas the teachers had had no teacher training, but on others the teachers were graduates from the Rural Normal School at Chimaltenango. To the extent that workers and their families are taught better nutrition, better hygiene, and better working habits, education can help improve their efficiency.

On some farms, transportation was provided for the products picked; on others transportation was provided for the workers also, with resulting savings in labor cost, according to the administrators. The one coffee farm on which the administrator specifically claimed that transportation of the workers lowered labor costs was the third most efficient in terms of man-days used per hundred pounds of coffee. The one cotton farm on which the administrator stressed the importance of transportation--and where transportation was provided both for the cotton and for the workers--ranked second in labor efficiency.

It would seem that some increase in efficiency can be obtained if some type of transportation is provided for the workers and the product wherever it is feasible. Some coffee, of course, is produced in steeply sloped areas where motorized transport would not be feasible. One large coffee farm had a cable car which carried the picked coffee from the two weighing stations to the <u>beneficio</u> (processing plant). On other farms, some of the coffee was transported by truck from a distant weighing station to the beneficio, while on others the coffee was carried considerable distances by the pickers. Likewise, on some cotton farms the cotton was carried by the pickers to the weighing

station at the farm headquarters and on others was weighed and loaded onto wagons in the field. In some cases the farm headquarters were close to where the cotton was being picked; in other cases the workers had to carry the cotton a considerable distance to the farm headquarters. Sugar cane is transported from the field either by ox cart or by tractor and wagon. In spite of the higher investment in tractors and wagons, they would seem to be sufficiently more efficient than the ox cart to justify their use. It would seem that, wherever feasible, motor transportation for the product would be more economical than the backs of workers, even with the low wage scale.

The loading of cotton might also be facilitated by the use of a gasoline-powered elevator. On most fincas the workers, after carrying the cotton to the weighing station and having it weighed, must carry it about ten feet up a shaky ladder and load it into a wagon. For the workers who picked a quintal (one hundred pounds) or more of cotton, this appeared to be a difficult task for them in the 90° to 100° F. heat. If this task could be lightened at the comparatively small cost of an elevator, it would be worthwhile, since it would probably increase the workers' willingness to pick a larger quantity of cotton. This device could likewise be used to pile the cotton on the ground, and to transfer it from one vehicle to another, a job which was done by hand on some of the fincas visited.

One finca owner provided two plots for each worker; one, as usual, was for corn and beans, and the other, near the colono's home, was for fruit and/or vegetables. This farm owner likewise provided

improved seeds and fertilizer for a portion of the crop, so that the colono could see the difference in yield and ask for additional fertilizer and improved seed for the following year. On this farm the colono had use of the same plot year after year unless he stopped taking care of it, in which case a committee of the workers would take it away from him and assign it to someone else. This assured the worker that improvements on the plot would accrue to him and not to someone else. These measures would seem to apply only to colonos. While there are migratory workers operating land in the highlands belonging to large finca owners, it would appear that increasing output on these plots would reduce the need of the workers to come to the finca to work.[14]

Many of the above mentioned measures would have an indirect effect on the efficiency of the workers by increasing their morale and their goodwill toward the finca administration. Other morale-increasing measures encountered were the provision of equipment and transportation for sports teams or musical groups. The holding of meetings to discuss problems and hear complaints against supervisory personnel helped one owner to win the goodwill of his workers. A similar measure was proposed by one finca owner--that is, the hearing of complaints against the habilitadores.[15] This, it was thought,

---

[14]W. Arthur Lewis, "Development with Unlimited Supplies of Labor," Readings in Economic Development, A.N. Agarwahl and S.P. Singh (eds.), London: Oxford University Press, 1958, p. 413.

[15]The labor contractors are called habilitadores.

would reduce the likelihood that the habilitadores would cheat workers by having more money deducted from their final settlement to pay the anticipos (advances) than had actually been advanced to them.

One finca owner provided, at cost, such items as radios, cameras, flashlights, bicycles, and beds, with the idea that this would increase the desire of the workers for these items and thus their desire to earn more money by working harder.

The above are some of the measures adopted by finca owners to increase labor efficiency. These measures may be responsible for some of the difference in labor efficiency on the fincas visited.

Other measures to promote the well-being of the workers and their families may also be effective. Regarding care for the children of working mothers, for example, it would seem that if the owner furnished a building and encouragement, small children could be cared for by some of the mothers. This would probably be better for the children's health than going to the field. Also, their mothers would be able to pick more coffee or cotton. It is also possible that some type of school training could be provided. Of course, this would involve only children between weaning and working ages, a period which often is only a few years.

Policy Implications

Since the seasonal workers are on the fincas for only a short time, measures taken by the finca owners to improve the health and welfare of the workers would be less effective than with the permanent workers, and the finca owners would be more reluctant to make the

necessary investments. Therefore, government action is needed both to encourage employers to undertake investments on behalf of the workers and also to make direct investments in the health and welfare of the workers--investments that will result in higher labor efficiency.

Because there is considerable difference in housing conditions, in rations, in wages, and in health services between fincas, a commendable policy would be to bring all fincas up to the levels of the better ones. This would have the effect of eliminating the possible unfair advantage held by the fincas offering poorer conditions and lower pay. It would be in the interest of the fincas which now offer better pay and better conditions to support measures promoting uniform treatment of workers at levels which they themselves maintain. Not to do so would be neglecting their own best interests. In coffee, for example, if such measures should force out of business some of the poorly managed farms which are able to make a profit only because they pay extremely low wages and offer poor living conditions, this would increase quotas for the remaining farms.

If government regulations concerning wages and living conditions are to be enacted, these regulations should be realistic and should attempt to generalize the wages and living conditions encountered on the better fincas. The laws should not attempt to punish past offenders but rather to better future conditions. For example, the government could, through technical advice and credit, help the farm owners in building low-cost yet adequate housing.

Since most migrant workers spend less than one-third of the year working on large farms, measures to improve the health,

nutritional, and educational levels of the workers while on the fincas cannot be effective if these levels remain low for the rest of the year. In recent years it has generally been accepted by economists and others that investment in human beings is necessary to development. The poor response of the economies of underdeveloped countries to increased investments of physical capital, compared to the rapid recovery of Europe after World War II, is often cited as an indication of the neglect of investment in human capital. The rapid economic growth in developed countries in proportion to investment in physical capital was thought by Schultz[16] to be a result of investment in human capital.

Schultz quoted Marshall and Pigou as having recognized the relationship between additional food for workers and increases in labor productivity, and pointed out that millions of people in Asia have so meager a diet that they cannot work more than a few hours per day. Goode[17] emphasized that public health measures which reduce illness, raise productivity, and increase the potential working life of individual's likewise make investments in their education more productive.

It is problematical to what extent health and nutrition do affect the productivity of migratory workers, either at home on

---

[16]Theodore W. Schultz, "Investing in Human Capital," American Economic Review, Vol. LI, December 1961, pp. 1026-1035.

[17]R. Goode, "Adding to the Stock of Physical and Human Capital," American Economic Review, Vol. XLIX, May 1959, pp. 147-155.

the altiplano or on large fincas. The large loads that men, women, and children carry on their backs cast doubt on the idea that physical weakness is a factor in low productivity. However, the argument of Goode[18] that an increase in life expectancy can make investment in education more productive is valid for Guatemala. From this point of view, expenditures for health and nutrition can be considered to be, to a large extent, investment rather than consumption expenditures.

Conclusions

The most readily apparent effect of an increase in labor productivity is to lower the cost of production to the growers, or at least to prevent rises in production costs when wage rates rise. In order to meet the competition of other countries, it is essential to prevent substantial increases in production costs.

Greater efficiency in the use of land and labor creates both opportunities and problems, especially from the social point of view. If the production per hectare of coffee, for example, is increased, the same amount of coffee can be produced on less land. The land thus freed from coffee production could be used to produce more coffee, produce other crops, or be left idle. Quotas would appear to preclude the first solution. Some land now in coffee is probably suitable for row cropping. However, for the steeply sloping land, there do not appear to be alternative crops which would hold the soil and at the

---

[18] Op. cit.

same time yield as high an income as even poorly managed coffee plantations. The third alternative, leaving the land idle, might be acceptable to some growers; but the agrarian reform law, which makes idle land subject to increasing land taxes, renders this alternative unacceptable to most of them.

The labor displaced through increased efficiency likewise presents both an opportunity and a problem. If the excess labor is put to use total production will be increased. If not, the greater labor efficiency will result merely in a higher level of unemployment. Somehow, a use must be found for the land that is not needed for the production of the export crops. Likewise, employment must be created for displaced workers, whether it is in other agricultural activities, urban employment, or in farming opportunities in other parts of the country.