Chapter 7

The Impact of Emergency Food on Food Prices and Production

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Perceptions of the Impact of Food Distribution Programs

One criticism of emergency food programs following the earthquake was that so much food was distributed that food prices decreased, thus penalizing farmers and food merchants with food to sell. It was believed by critics that an ample supply of food was on hand and that massive distributions of free food could only have a negative impact on the market. By lowering the income of farmers and others dealing in foods, they were denied money needed for reconstruction of their houses and the replacement of their household goods. Of special interest was the importation of basic grains since these were in direct competition with Guatemalan products.

The question of price impact is a complex one to deal with and requires a rather careful analysis. There are a number of complicated theoretical issues involved. These will be dealt with first to set the stage for later data analysis.

Prices in a free market situation are determined by the relationship between supply and demand. The argument for a price impact of massive free food distribution is that such distributions offer an increased supply of food at zero price and thereby siphon off demand, leaving the remaining supply of food saleable only at a lower price than would have been the case with no competition from free food distribution. In other words, it is by satisfying demand without cost, thus lowering the aggregate demand for the products left over after free food distribution, that the price

impact takes place.

Demand in reasoning related to the determination of prices refers to people who have money to spend on a product at a given price. Those who have no money to spend at any price are simply not in the market and, as a consequence, can have no impact on prices. The penniless may want and need food but in an economic sense they are not a part of the "demand" for it.

If free food were distributed only to people who had no money and were therefore not in the market, it could not have any price impact since it would not have any impact on satisfying demand. True, it would satisfy wants, or needs, but it would not satisfy demand in the economic sense. The question of price impact from emergency food boils down in one sense to a question of whether the disaster impacted population had the money to spend for food, and whether a supply of food was available to satisfy that demand in a functioning market at a price that would allow people to function as they normally did in the market. If the foods distributed would otherwise have been bought, then a price impact is expected.

That impact could have one of two effects. First, it could lower prices in an absolute sense so that they would be lower after the earthquake than before. This would cut into the normal incomes of farmers and have a negative effect on the agricultural economy although it would benefit those receiving food to the extent that they would have lower food bills. A second possible effect would be to mitigate price increases caused by the earthquake's effect on supply. If the supply of food were reduced by the earthquake and demand remained high, a price increase would be expected. Free food distribution, if it only replaced losses, would prevent a price increase. This of course actually amounts to lowering

prices below what they would have been if no free food were distributed. Windfall profits would be lost and this would affect farmers' and food merchants' incomes. It would, however, have a positive effect on consumers by preventing increases in food bills.

Whether the impact would be large or small is a question of how much of the product is introduced into the market at zero price in relation to the amount already available, and traded in the market. If a very small amount of increase in supply occurs as a result of food distribution, and some of this is distributed to people who would not otherwise have bought it, the price impact should be small. It might, however, impact on prices in the market for a short time during which it could supply the demand that would ordinarily be registered as purchases.

After this period was over, prices should return to their previous level and the supply of food offered in the market, along with continuing demand, would determine prices. This is like saying if enough free food were available to meet the demand registered on the market for one day, prices that day would drop to zero and no one would buy food. However, the next day, when no free food is offered, the ordinary price mechanisms would prevail. Long range impact would depend on whether at the end of a crop year supply remained larger than usual to the extent that it affects supply-demand relationships and results in a lower than expected price.

It is impossible to tell how many of the people receiving free food were without funds to buy it and therefore to assess the true increase supply, or reduction in demand caused by it. It is possible, however, to relate the amount of food distributed as disaster aid to the annual production of that product and thereby to assess the probability of a

large or small price impact. This will be done after we examine the perception of people with respect to what happened to prices following the earthquake.

Perception of Food Price Impact of the Disaster and Relief Effort

During the course of the first interview, which took place approximately two years after the earthquake,household heads were asked what happened to food prices in their particular towns following the earthquake. This question was part of a series which asked about food shortages caused by the earthquake and about emergency food distribution. The context implied that price changes due to the earthquake were the subject of the question but the question was stated simply as, "Do you think food prices in this town changed after the earthquake?"

Table 7-1 gives a summary of the answers to this question for the control, experimental group and city samples. Over 82 percent of all respondents said that food prices increased in their particular towns and only about two percent said they decreased. The remaining 12 percent, excluding those who did not answer, said food prices remained the same. It must be remembered that a general inflation in all prices was taking place in Guatemala at the time of the earthquake, and food prices were no exception. It is to be expected, therefore, that most people would notice a price increase and report it in response to this question, even if the earthquake had not occurred. The interesting thing about this table is that fewer people in the experimental group than in the control group reported such increases (76.5% as compared to 88.5%). Furthermore, more people in the experimental group than in the control group reported

TABLE 7-1

Perceptions of Food Price Changes in the Control, Experimental Group and City

Did Food Prices Change	Control Group		Experimental Group		City		Total	
	#	%	#	%	#	%	#	%
No Change	46	8.0	142	17.7	23	7.2	211	12.4
Decreased	5	0.9	26	3.2	6	1.9	37	2.2
Increased	507	88.5	615	76.5	279	87.2	1401	82.6
No Information	15	2.7	21	2.6	12	3.7	48	2.8
TOTAL	573	100.0	804	100.0	320	100.0	1697	100.0

price decreases (3.2% as compared to 0.9%). When the no information category and the city are eliminated and the control and experimental group are compared using Chi Square, a significant difference is obtained (X^2 = 37.2 with 2df, Prob. .0001).

This points indirectly to the possibility that food distribution by relief agencies in the experimental group may have mitigated the effects of price increases due to inflation, and to earthquake created shortages, resulting in lower increases, rather than decreases in prices. Of course these data merely examine the number of people reporting increases and decreases and not the actual price changes which occurred or their amount.

A result with a similar possible interpretation is obtained when the regions of the country are considered using only the experimental group. In the East 71.7 percent said food prices increased as compared to 85.1 percent in the Highlands. In contrast, 4.5 percent said prices decreased in the East, and 1.3 percent in the Highlands. The remainder said they

remained the same or gave no information. This result is also statistically significant (X^2 =39.4, 2df. Prob. .0001).

Observations concerning food distribution show that more families received free food in the East than in the Highlands (55.4% as compared to 50.2%) and food distributions continued for a longer time. Again it appears possible that food distribution programs may have had more of a moderating effect on price increases in the East than in the Highlands. It appears possible that, rather than lowering prices from pre-earthquake levels, the effect was to lower the rate of increase throughout the impact zone. Whether this is true or not depends upon analysis of actual price data. This will be presented below but before that it will be useful to examine perceptions of the price impact of food programs and of their effects on agricultural production taken from the final interview conducted four years after the earthquake.

In order to clarify perceptions of food program impact obtained in the first interview, a series of questions were introduced into the final one. These questions, among other things, asked whether food programs in general (whether emergency or regular programs) have an impact on food prices. The previously discussed question asked whether food prices changed after the earthquake, and did not inquire into the respondents' beliefs concerning whether food programs were among the causes. The results of the question specifically concerning food program impact on prices are given in Table 7-2.

Not surprisingly, over 91 percent of all respondents said they do not have any effect on food prices. Only two persons said they decrease them, while 3.7 percent said they increase such prices. It is difficult to understand how food programs involving the free distribution of food

TABLE 7-2

Perception of Food Program Impact on Food Prices for Control, Experimental Group and City

Do Food Programs Affect Prices	Control Group		Experimental Group		City		Total	
	#	%	#	%	#	%	#	%
No	222	93.6	215	88.1	109	93.2	546	91.3
Yes, Increase	2	0.8	15	6.1	5	4.3	22	3.7
Yes, Decrease	2	0.8	0	0.0	0	0.0	2	0.3
No Information	11	4.8	14	5.7	3	2.5	28	4.7
TOTAL*	238	100.0	244	100.0	117	100.0	599	100.0

*Only persons on food programs, or who said they knew about them were asked this question.

products could increase prices. It must be assumed therefore that some respondents misunderstood the question or were reporting what they perceived to be the price trend in their communities.

Similar results were obtained for food program impact on production, with one difference. The vast majority of respondents (90.7%) said food programs do not affect food production but at the same time, 3.4 percent said that they lower production as compared to 1.0 percent who said they raised production. About 5.0 percent of all respondents could give no answer to this question. If these are discounted, then 95 percent of those giving answers to the question said there was no production impact and 4 percent said they lowered production. The remaining one percent said they raised it.

Only persons who actually reported being on PL-480 food programs, or who claimed they knew about them, were asked these questions. It is likely

that they were answering concerning regular food programs rather than the emergency food programs which followed the disaster.

When the same respondents were asked whether they thought food programs are helpful and whether they are fair or just, the answers given in Table 7-3 were obtained. The most interesting finding contained in this table is that 58.3 percent of all respondents had no knowledge of food programs. In other words, well over half of all respondents either did not know that such programs existed, or had so little information about them that they could not answer this question.

Of those who answered,557 said they helped the families enrolled and 33 said they did not. This means that 94.4 percent of those familiar with food programs regarded them as being helpful.

Those who said they knew about food programs were asked whether they thought they were "fair" or "just." Presumably they answered this question in terms of whether they were managed in an equitable fashion. Table 7-4 gives the results of this question. Of the 600 persons who were asked this question, 47, or 7.8 percent, were unable to give an opinion on this question. Apparently, while they knew something about the programs, they either did not know enough to express an opinion or where reluctant to do so for other reasons. Of those expressing an opinion,462 , or 83.5 percent, said food programs were fair. The remaining 16.5 percent said they were unfair or unjust. While this indicates a relatively high rate of approval for food programs, a substantial number of people are critical. Considering the tendency of subjects to express approval, and reluctance to express disapproval, this is a finding worth further evaluation. For example, are those who say food programs are unjust, people who are not on food programs?

Table 7-3

Distribution of Answers to the Question: Do Food Programs Help?

Do Food Programs Help	Control Group		Experimental Group		City		Total	
	No.	%	No.	%	No.	%	No.	%
No	24	4.8	4	0.6	5	1.9	33	2.3
Yes	207	41.1	238	35.9	112	41.8	557	38.8
Don't Know About Programs	266	52.8	419	63.2	151	56.3	838	58.3
No Info.	7	1.3	2	0.3	0	0.0	9	0.6
TOTAL	504	100.0	663	100.0	268	100.0	1437	100.0

Table 7-4

Distribution of Answers to the Question: Are Food Programs Fair or Just?

Are Food Programs Fair or Just	Control Group		Experimental Group		City		Total	
	No.	%	No.	%	No.	%	No.	%
No	39	16.3	29	11.8	23	19.7	91	15.1
Yes	183	77.1	196	80.0	83	70.9	462	77.1
No Info.	16	6.6	20	8.2	11	9.4	47	7.8
TOTAL	238	100.0	245	100.0	117	100.0	600	100.0

Do they concentrate in one or two villages where programs are badly run or are they scattered over the country?

When only those who say food programs are unjust are examined, 74 out of 91, or 81.6 percent, are people who are not on food programs, and 17, or 18.4 percent, are people who are on food programs. It appears therefore that there is a strong association between being included or excluded from participation in PL-480 programs and approval or disapproval of them. When the data were examined to determine if those who disapprove were concentrated in one or two villages, it was found that nearly two-thirds of all cases saying food programs were unfair came from six communities out of the total of twenty-six. These units include two city neighborhoods, one aldea in the experimental group and two municipios and an aldea in the control group. In 16 villages, three or less people made such a statement.

These results, though statistically small, point to the conclusion that food programs are regarded as fair in most of our sample units. However, in a few of them there appears to be a problem in how food programs are being managed. It should be remembered, however, that these results pertain primarily to regular PL-480 food programs and not to emergency food distribution programs. Since much of the food distributed during the year following the earthquake (about 2/3) was distributed through regular PL-480 food programs, rather than through special emergency distribution systems, these results have indirect significance for this post-disaster food distribution study.

The Amount and Type of Food Distributed in Guatemala After the Earthquake

Various sources disagree on the amount and kinds of food distributed by relief agencies following the 1976 earthquake. For example, Froman, Jackson and Gersony, in their report entitled, "General Review of PL-480 Food Assistance in Guatemala, June 1977," state that 25,400 metric tons of food were distributed during 1976. They claim that this food was broken down into types as follows:

TABLE 7-5

PL-480 Food Distributed in Guatemala During 1976
(Source - Froman, Jackson and Gersony Report)

Basic Grains		
Corn (Mostly whole yellow corn, some processed)	25%	6,400 tons
Beans	20%	5,000 tons
Wheat (Bulgur wheat and wheat flour)	20%	5,200 tons
Oats	5%	1,200 tons
TOTAL	70%	17,800 tons
Other Foods		
Whey-Soy mix	11%	2,900 tons
Milk-Powder	6%	1,600 tons
Cooking Oil	5%	1,200 tons
Other	8%	1,900 tons
TOTAL	30%	7,600 tons

In contrast, data obtained from the U. S. Embassy in Guatemala City on PL-480 food actually distributed by CARE and Catholic Relief Services to families give the following figures (Table 7-6). As can be seen, there

TABLE 7-6

PL-480 Food Distributed in Guatemala January 1976-December 1976
(Source: U. S. Embassy, Guatemala City 1980)

Basic Grains		
Corn (yellow)	9.2%	1,684 tons
Beans (Pinto)	14.0%	2,551 tons
Wheat (Wheat Flour and Bulgur)	24.5%	4,467 tons
Oats (Rolled)	5.9%	1,086 tons
TOTAL	53.6%	9,788 tons
Other Foods		
Whey Soy	4.0%	738 tons
Powdered Milk	4.3%	778 tons
Cooking Oil	6.3%	1,144 tons
Other (CSM,Sorghum grits,Incaparina, WSB)	31.8%	5,805 tons
TOTAL	46.4%	8,465 tons
GRAND TOTAL	100.00	18,253 tons

are substantial differences between these two tabulations. The most important difference from the perspective of this report lies in the figures given for corn and beans and for the total amount of food distributed. Froman, Jackson and Gersony report that 6,400 tons of corn were distributed,while the U.S. Embassy reported that only 1,684 tons were passed out through CARE and CARITAS. This difference of 4,716 metric tons is extremely large and could account for a difference of opinion as to the potential impact of corn distribution on prices.

The figures on beans show a similar discrepancy, with Froman, Jackson and Gersony reporting that 5,000 tons were distributed, while the U. S.

Embassy reported 2,551 tons, a difference of 2,449 tons. The category "Other Products" also shows a large discrepancy in the opposite direction. Here, the Embassy reported a greater amount (5,805 tons) than Froman, Jackson and Gersony (1,900 tons). The difference of 3,905 tons is in such products as CSM (corn, soy, milk), sorghum grits, WSB(wheat soy blend) and Incaparina.

The difference in figures given for the total amount of food distributed by the two sources is quite large, with Froman, Jackson and Gersony reporting a total of 25,400 metric tons and the U. S. Embassy reporting 18,253, for a difference of 7,147 metric tons. The larger figure is 39% larger than the smaller figure. Most of this difference is due to higher figures for basic grains in the Froman, Jackson and Gersony report where they report a total of 17,800 tons of "basic grains" as opposed to 8,788 reported by the Embassy for a difference of 9,012.

Figures on PL-480 are compiled on various bases and the tabulations using these different bases do not always agree. One way is to report the amount and type of food requested by agencies in their annual budget requests. A second way is to report the actual amounts delivered at the port of delivery. A third way is to report the amount distributed through food programs in a given period of time. This last figure discounts the amount of spoilage and loss between the port and the actual distribution to program families. It also does not include the amount of food actually delivered to the port but held in storage for future delivery to families, or that stockpiled against future emergencies. It may, however, include amounts taken from stockpiled storage which were actually delivered to the port in previous years.

The figures needed for this study, which attempts to evaluate the effect of food programs on food prices, are the amounts of food actually delivered to families on a month by month basis.

The figures supplied by the U. S. Embassy in Guatemala on the actual distribution of food were given either by quarters or trimesters, depending on the year. Because they come closest to meeting the needs of this study for monthly figures on actual food delivery, they will be used in the following analysis.

One further note needs to be made concerning calendar years, fiscal years and agricultural years. To test hypotheses concerning price effects, agricultural years are desirable,with the year going from harvest to harvest. In Guatemala the calendar year comes very close to satisfying this requirement. It is therefore used in presenting the figures and in doing the analysis in this report.

The U. S. Fiscal year 1976 was the year in which a change was made from using July 1 to June 30 as the basis,to using October 1 to September 30. As a consequence, 1976 is a unique fiscal year, containing five quarters instead of the usual four. Therefore, when comparing it to previous or following years, one-fifth must be subtracted from the figures. If this is done on the assumption that the Froman, Jackson and Gersony figures are for the fiscal rather than calendar year, the figures presented in the above tables converge. This would result in 5,080 tons being subtracted from the 25,400 tons reported, leaving 20,320 tons for a twelve month year. This is a great deal closer to the figure of 18,253 tons obtained from the Embassy figures used in this study.

The Froman, Jackson and Gersony report gives no sources for its figures nor is it clear that only PL-480 foods are included in the amounts reported.

It is possible that foods from other sources were added in or that their figures are based on the amount of food ordered, or received at the port rather than actual amounts distributed. Furthermore, whether they represent fiscal or calendar years is not specified. Considerable effort was expended in checking out the Embassy figures and they are believed to be correct for the amounts of each product distributed during the Calendar Year 1976 by CARE and CARITAS, the two organizations handling PL-480 foods in Guatemala.

In addition to the PL-480 foods, the Reconstruction Committee reported that the Mexican Government distributed 3,500 tons of food in the form of cooked meals distributed in Guatemala City. It also reported that other Central American countries, Mexico, Colombia, Venezuela and Brazil sent food supplies in small quantities amounting on a whole, to between 500 and 1000 tons. In addition, European countries sent food supplies in the form of canned or preserved foods, most of which never left Guatemala City.

In addition to these sources, there were various unconfirmed rumors of food sent from various sources. For example, it was said that a shipload of basic grains was sent from Nicaragua but no one can confirm that this actually took place. Further confusing the figures is the fact that emergency supplies were borrowed from PL-480 stores in Salvador and later returned when emergency food arrived in Guatemala.

At any rate, it is believed that the figures given by the U. S. Embassy represent the actual amount of food distributed in Guatemala during the year shown in the above table. The detailed information upon which this table is based is given in Table 7-7.

Examination of these data will reveal that PL-480 imports increased from 7,335 tons in 1975 to 18,672 tons in 1976. It is very difficult to

Table 7-7

PL-480 Food Products Distributed by CARE and CRS in Guatemala

January 1, 1974 - December 31, 1979
(Reported in thousands of pounds)*

Year	Wheat Flour	CSM (Corn Soy Milk)	Non-Fat Powdered Milk	Soybean Oil	Rolled Oats	Bulgur	Sorghum Grits	WSDM (Whey Soy)	Yellow Corn	WSB (Wheat Soy Blend)	Incaparina	Soy Fortified Rice	Pinto Beans	Total in Thousands of pounds	Total Metric Tons**
1974	4,595	3,825	338	1,181	386	460	424	38	493	592	0	0	0	12,332	5,594
1975	3,884	3,265	259	1,039	622	2,017	1,710	1,183	1,102	979	103	0	0	16,163	7,331
1976	6,821	5,400	1,715	2,522	2,395	3,027	2,102	1,626	3,712	5,291	9	0	5,624	41,146	18,664
1977	5,662	1,865	3,981	2,405	1,253	3,069	1,826	1,828	2,216	1,845	0	0	5,308	31,268	14,183
1978	4,724	6,646	4,291	2,724	1,723	2,651	615	1,086	0	649	0	0	41	25,150	11,408
1979	4,255	6,444	5,706	3,094	1,213	1,618	0	0	0	731	0	3,905	0	26,964	12,231

* Source: Food for Peace Office, U. S. Embassy, Guatemala City, 1980.

** 1 metric ton = 2204.6 pounds.

estimate the amount actually distributed for emergency purposes as opposed to regular purposes. Figures supplied by CARE and Catholic Relief indicate that approximately 1/3 of the total amount was used as emergency supplies and the remainder was distributed through regular maternal-child care, school and church programs that had been operating before the earthquake. Again the Froman, Jackson and Gersony report disagrees by reversing these proportions.

In the long run, it is best to regard all PL-480 food as serving some emergency relief purpose during the first 90 days after the earthquake. After that date it served other purposes. In addition to being distributed through regular on-going food programs, PL-480 food was used in connection with "food for work" programs. Many of these food for work projects were carried out after the emergency was over and were all actually "reconstruction" projects. Such programs contributed to the reconstruction of community facilities and at the same time represented an economic gain to those persons participating which could also aid in reconstruction at the household level.

For example, CARE reported that between February and May 1976 they distributed 1,384,817 pounds of PL-480 commodities in food for work programs at a rate of 5.25 pounds per man day. This accounts for 263,774 man days of labor. They report that workers were employed 14 days on an average,providing a work force of 18,800 workers. These workers were employed primarily in tearing down potentially dangerous ruins of public buildings and in road clearing operations. Instructions to field staffs specifically ruled out payment for work on private homes.

During the period between June 1976 and January 1977, an additional

3,742,429 pounds of PL-480 commodities were used by CARE in food for work programs,providing an additional 707,129 man days of labor and an average monthly work force of 6,300 workers. This work force was used to repair roads and to erect temporary school buildings.

According to CARE,all of the emergency food it distributed was through such work programs. The remainder distributed by them flowed through regular food programs. Within these programs larger than normal amounts of food were distributed in order to reach more malnourished pre-school children than had been enrolled in the programs in previous years.

It can be seen that PL-480 food distribution had multiple goals. It was not only intended to feed hungry people but also to provide a resource which would provide a work force to assist in reconstruction. Furthermore, food for work provided income in kind that could release other income for use in meeting other emergency needs created by the earthquake.

As in all emergency programs carried out on a large scale in disaster situations, there were no doubt abuses. Undoubtedly some people received food for work who did not actually work or who worked on personal projects rather than public ones. Nevertheless, rubble was cleared, and dangerous structures were torn down and roads repaired through the use of a labor force paid by food for work.

Notwithstanding these facts,the question still remains as to whether the food distribution program was so massive and so mismanaged as to have a negative impact on food prices and food production. In order to gain some perspective on this question before looking at figures on food prices and on what happened to food production, it will be useful to compare PL-480 imports to agricultural production figures. This is done in Table 7-8.

TABLE 7-8

Comparison of Basic Grain Production with PL-480 Imports 1974-1979
(metric tons)

	Corn			Beans			Rice			Sorghum		
	Production	PL 480	%	Production	PL 480	%	Production	PL 480	%	Productin	PL 480	%
1974	698,000	178	0.02	67,000	-	-	47,000	-	-	47,000	192	0.41
1975	881,000	500	0.06	86,000	-	-	61,000	-	-	61,000	776	1.27
1976	842,000	1,684	0.20	78,000	2,551	3.27	50,000	-	-	50,000	953	1.91
1977	821,000	1,006	0.12	57,000	2,409	4.22	49,200	-	-	49,200	829	1.68
1978	842,000	-	-	80,500	19	0.02	64,700	-	-	64,700	279	0.43
1979	820,800	-	-	77,000	-	-	63,500	1,772	2.79	63,500	-	-

This tabulation compares food production figures for four basic grains with the quantities of the same food product distributed by CARE and Catholic Relief during the period 1974 to 1979. In the first column it is seen that in 1974 the amount of PL-480 corn distributed amounted to 0.02 percent of the corn produced in Guatemala that year. In other words, PL-480 corn amounted to two-hundredths of one percent of annual production. In the year of the earthquake, 1976,PL-480 corn reached 0.20 percent of the corn produced. While this figure is ten times as large as the 1974 figure, the amount is only two-tenths of one percent of the total corn production. The significance of this figure is that the supply of corn available for consumption in Guatemala was increased by this amount by the addition of PL-480 products. This increase is the one that would have a price impact if any occurred. Since it is proportionately small, only a small impact on prices should be expected. Furthermore, since there was an earthquake caused loss of five percent in agricultural products reported by the Emergency Committee on the basis of field surveys, the price impact should be to moderate the effects which would have occurred due to disaster related losses. In short, the effects of PL-480 foods would have been a reduction in "windfall" profits which would have occurred due to this loss.

In the case of beans and sorghum, it will be seen that the percentages are much greater. For beans the Pl-480 figure is 3.27%, a significant percentage of the total national production and for sorghum the figure 1.91% is also high. Here larger price impacts should be expected. In the case of rice, none was distributed through PL-480 sources and therefore no price impact is expected.

This table shows, among other things, that 1975 had been an unusually

productive agricultural year for corn, beans, rice and sorghum. Table 7-9 shows the percentage increase in the production of these products year by year from 1970 to 1981. These figures are for agricultural years rather than calendar years. This means that the food on hand for consumption by earthquake victims following the earthquake was that produced in 1975-76. Production of corn that year was 39.26 percent higher than the previous year. Beans were up 28.00 percent, rice 35.29 percent and sorghum 29.79 percent. The data on corn and beans are summarized in Figures 7-1 and 7-2.

As a consequence of this large harvest, it would be expected that prices would have been declining sharply at the time of the earthquake. The five percent loss of agricultural products due to earthquake damage would have moderated this decline,while PL-480 food distribution should have had the effect of overcoming a portion of the five percent loss, resulting in slightly less of an upward change than would have been expected as a result of the disaster caused food loss.

Of further interest is the fact that during the two years following the earthquake,food production dropped. It declined from the 1975 high by 4.42 percent for corn, 9.30 percent for beans, 71.74 percent for rice and 18.63 percent for sorghum in 1976-77, and by a further 7.13 percent for corn, 26.92 percent for beans, 23.08 percent for rice and 2.00 for sorghum in 1977-78. These declines were probably produced by many factors working together. For example, lower prices produced by the bumper crop of 1975-76 would have a discouraging effect on agricultural production. Weather conditions represent a second factor. During the two years following the earthquake, moderate droughts occurred two summers in a row. Finally,there is substantial evidence that many farmers sold their labor

TABLE 7-9

Production of Four Basic Foods in Guatemala 1970-1980 Showing Changes in Production

Each Year Compared to the Previous Year (In Thousands of Metric Tons)

Year	Beans		Corn		Rice		Sorghum	
	1000 Metric Tons	Percent Change from Last Year	1000 Metric Tons	Percent Change from Last Year	1000 Metric Tons	Percent Change from Last Year	1000 Metric Tons	Percent Change from Last Year
1970-71	70	-	760	-	26	-	34	-
1971-72	77	+10.00	746	+ 1.84	37	+46.15	35	+ 2.94
1972-73	55	-28.82	685	-10.05	40	+ 5.26	45	+28.57
1973-74	67	+21.82	701	+13.28	40	0.00	46	+ 2.22
1974-75	67	0.00	698	- 0.42	34	-15.00	47	+ 2.17
1975-76	86	+28.00	881	+39.26	46	+35.29	61	+29.79
1976-77	78	- 9.30	842	- 4.42	13	-71.74	50	-18.03
1977-78	57	-26.92	821	- 7.13	16	+23.08	49	- 2.00
1978-79	80	+42.11	944	+14.98	27	+68.75	65	+32.65
1979-80	77	- 4.94	1,058	+12.07	39	+44.44	64	- 1.54
1980-81	81	+ 5.19	1,050	- 0.75	45	+15.38	78	+21.88

Source: Agricultural Attache, U. S. Embassy, Guatemala
verified against FAS/USDA Report FG-4-81, dated 28 Jan. 1981

FIGURE 7-1

METRIC TONS OF CORN PRODUCED ANNUALLY 1970 – 1980

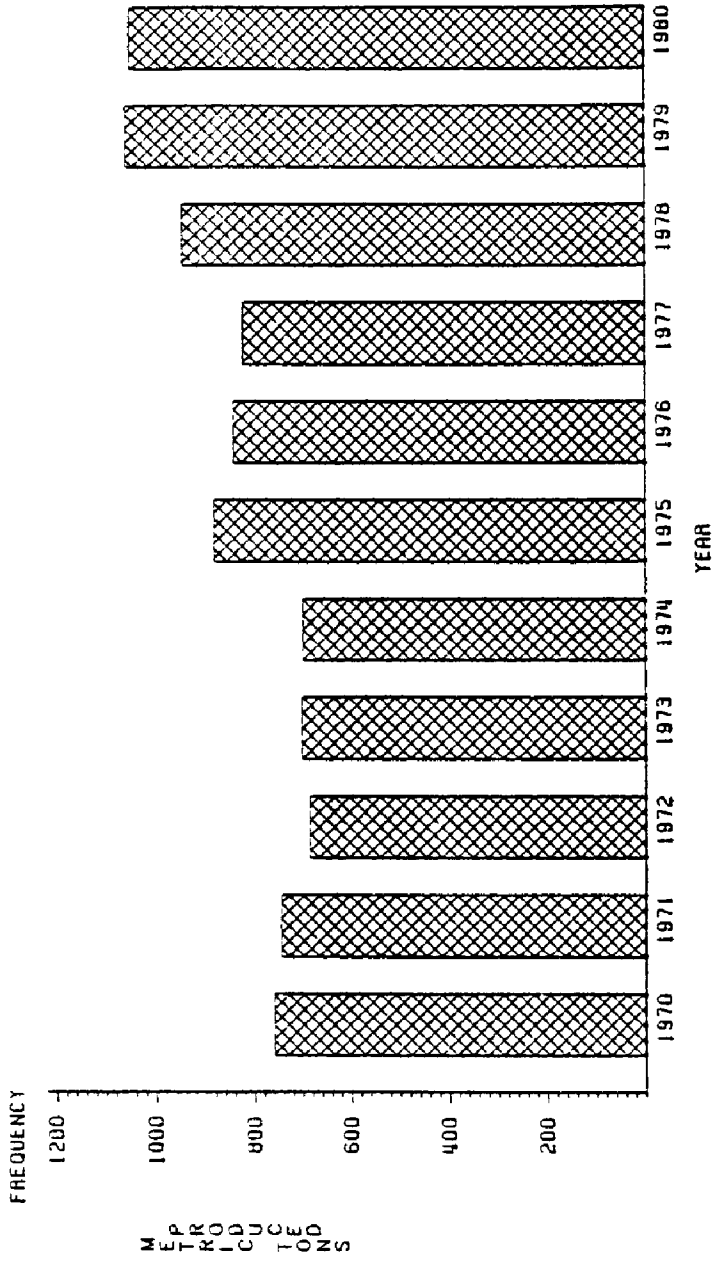

FIGURE 7-2

METRIC TONS OF BEANS PRODUCED ANNUALLY 1970 - 1980