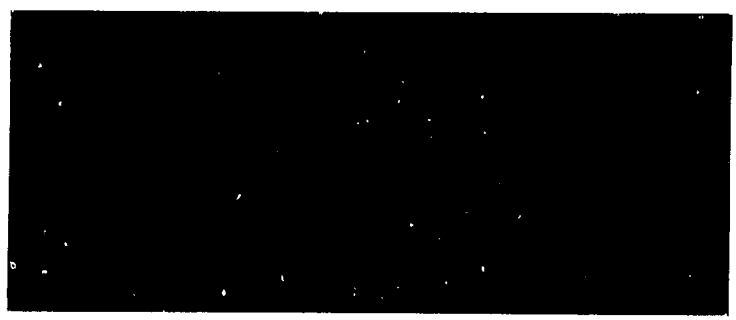

MASI

Multinational Agribusiness Systems Incorporated

PARAGUAY

MINIFUNDIA CROP INTENSIFICATION PROJECT

DOMESTIC MARKETING REPORT

USAID-CREDICOOP-MASI

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I. INTRODUCTION

Project plans involve a study of the domestic marketing of four target products: tomato, banana, strawberries, and pineapple. Two study periods are contemplated, six weeks in 1981 (May 27 to July 2) and another six weeks in 1982 (probably close to the same dates). This report covers the 1981 study period.

The study procedure covered two general considerations for each product:

- Marketing structure. Identification of marketing channels, packing, grading, presentation, and seasonality; and

- Price relations. Farm level price constraints, and marketing margins.

Field trips were made to producing areas, the wholesale market of Asuncion (Market 4) and to retail outlets. The new CREDICOOP packing plant and offices, expected to be ready for occupancy in August, were visited, as well as the wholesale market under construction nearby. These structures are located on Calle Ultima at the southeastern edge of Asuncion.

In view of the decision to conduct the study over two periods, it was decided after consultation with the CREDICOOP and AID officials to establish the following priorities:

a. Tomato. Study all aspects of the marketing system relevant to CREDICOOP objectives. This included a visit to the producing area of the Minifundia Project, Quiindy; collection of data from a cooperator farm now growing tomatoes with cooperative-credit financing; examination of the marketing structure for domestic and export sale; price relations and margins; export procedures and prices in Asuncion and Buenos Aires; CREDICOOP grading, pricing and sales liquidation experience; recommendations or suggestions. Since the cooperative at Quiindy (and three others) are producing for CREDICOOP marketing this year, first priority was given to this crop in the study.

b. Banana. This crop was accorded the second level of priority. Farmers in three cooperatives have been selected for the project and the new plantations have been established at these sites. However, since the first crop will not be ready until early next year, study of the marketing problems are not quite as urgent for banana as for tomato. Another consideration is that the varieties grown in Paraguay are probably not amenable to international marketing (being small-size, thin-skinned varieties), which means that the marketing of CREDICOOP products can be simply channeled into the existing commercial structure. The study involved visits to a cooperator at Coronel Oviedo, where the new minifundia banana project is

located, and to several established producers near Asuncion; identification of the various steps in the marketing channel, including ripening; comparison of the price structure and margins; grading procedure, price differentials, and product quality.

c. Strawberries. Neither the cooperative nor the farmers have yet been selected for the project. Furthermore, the seed plants are only being produced now; hence the first crop is almost a year off. Study at the producer level was limited to gathering data on production costs, which can be applied next year to a simulation procedure, as has been done for tomato and banana, once the cooperating farmers have been selected. Producing areas visited were Aregna and Nemby.

The market for strawberries was examined rather superficially. The domestic crop is not on the market until later in the year. Therefore, information on marketing was entirely second-hand. Small quantities of imported Brazilian berries now being sold, and some information on packaging, pricing and distribution of this product was obtained in Asuncion.

In regard to exports, wholesale price information was obtained from Buenos Aires, but product quality and similar marketing requirements were not studied at this time. Neither was information obtained on manufacturing strawberry products or on future possibilities of frozen strawberries.

d. Pineapple. The current status of the pineapple aspect of the Minifundia Project is rather similar to that of strawberries. Farm selection and planting are expected for next year and production possibly as late as 1983. At this time, a final decision on variety has not been made. Under these circumstances, it was decided to postpone farm simulation analysis until next year's visit. Likewise, with very little fruit on the market, a full-blown study of the commercial aspects was not feasible. Limited information on varieties, prices, presentation and seasonality was obtained in Mercado 4; also wholesale price data in Buenos Aires, a small, seasonal market for Paraguayan pineapple. A field trip to Nueva Italia was made to observe marketing procedures in producing areas.

The study was conducted with the fullest cooperation of the Marketing Department of CREDICOOP. Osvaldo Gonzales accompanied us on most of the field trips and market visits. Gregory Wyman, a Peace Corps volunteer in the same department, was assigned to help in data gathering, and he prepared the major part of the background statements on the four commodities studied.

II. TOMATOES

A. Survey procedure

The only cooperative officially involved in the Minifundia project this year for tomatoes is the one at Quiindy although 3 other cooperative are also producing. One day was spent at the cooper-

ative. In the absence of the Coop Manager, the extension agent Gilberto Sanchez Nunez was interviewed for information on Coop marketing procedures. A single farm selected by the Coop as typical of those in the project was visited in order to test for financial feasibility at the farm level. The wholesale and retail sections of Market 4 in Asuncion were visited to evaluate product presentation (quality, grading, packing, etc.) accompanied by Carlos Benitez Figueredo, Market Administrator, also, one of the largest wholesalers and exporters, Mr. Iwao Ishida (Gran Mercado de Asuncion S.R.L. and CREDICOOP marketing advisor) was interviewed. Data on domestic production, prices trade and exports to Buenos Aires were obtained from the Ministry of Agriculture, Argentine Consulate, National Bank of Argentina, and the American Embassy. While there were rather large gaps in the data base (e.g., reliable current production and export statistics were apparently not available) the CREDICOOP officials themselves were a major source of information, since they well-acquainted with the marketing situation.

B. Marketing structure.

A general description of the structure of the tomato market, with specific attention to CREDICOOP experience, is given in Annex I. Certain gaps will be noted which are due to lack of statistics. For example, data on marketing destinations, and farm-consumer price spreads are incomplete. A summary of price discounts of CREDICOOP tomato sales to Buenos Aires is given in Table 1 below.

Table 1

Price discounts of CREDICOOP tomato sales in Buenos Aires by classes

(Base = 100)

Color Class	Size Class			Color Class
	Cero	Primera	Extra	
Verde	58	69	74	73
Pintada	80	94	100	100
Colorada	78	92	99	97
Size class	79	93	100	

C. Conclusions on the marketing situation

1. The pricing structure, both in the domestic and Buenos Aires markets, is more favorable in the winter months (August and September), so CREDICOOP is concentrating program efforts on producing for the winter market. The 1979 and 1980 price patterns shown in Annex I raise a question as to how readily farmers will be able to produce successfully in that part of the year. High prices mean shortages of supply; hence it may be anticipated that there will be yield losses in some years or places due to low temperatures.

2. No varietal constraint on marketing was noted. The two varieties in the program, Noyomi (also called "Lisa" in the local market) and Giant Santa Cruz are good-quality fruits, fully acceptable in Asuncion and Buenos Aires.

3. Financial feasibility at the farm level seems to be outstandingly favorable. This indication was obtained by type-farm simulation analyses, i.e., a survey of the financial structure of a "typical" farm using the traditional crop program and then superimposing on this structure the financial results of the revised tomato program. Since, in the time available, it was possible to apply this procedure only to a single farm, the result must be considered tentative; however, it provides a first approximation of the outcome. The significant comparisons (see Annex II for details) are as follows:

Table 2

Ratio	Traditional (%)	Revised (%)	Marginal Benefit (%)
Profit as a percent			
- of investment (excl. land)	91	320	840
- of cost	87	184	253
- of gross income	50	66	72

The family income per capita was estimated at US$347 with the traditional program; and at US$1,130 with the revised program. With such large increases under the program, it would appear that there is no significant financial constraint on marketing at the farm level and that tomato production is likely to be a financially attractive alternative to the farmer.

4. There is already a well-developed, functional marketing structure in place both for domestic consumption and export. Specifically, the following observations were made in regard to domestic market structure:

a. Product presentation adequate to excellent. Fruit generally clean and free of major defects. Packed in wooden crates (18-20kg each) and often graded by size classes and ripeness. Little shipping damage was noted in the market.

b. No official grades or sanitation standards, but informal commercial grades generally used, based on size, ripeness, and defects (mainly malformation called "flowering"). Cutface scars are minor. Fruit not complying with these standards is sold in the towns of producing areas, consumed by the farm families, or sold in Asuncion at reduced prices.

c. Deliveries to the Asuncion market are made both directly by the larger farmers as well as through buyers and haulers (especially for tomatoes produced by the small farmers). In the latter situation, the middlemen normally buy the farmers' crop rather than sell it on commission.

5. CREDICOOP grading is aligned to the usual practices in the Asuncion market as described in Annex I. Grading is informal, ocular and not precisely defined, based on size and degree of maturity for the two current varieties. The classification in Argentina is said to be similar to CREDICOOP's and, furthermore, the auction bids are made on visual inspection. However, a careful investigation of Argentinian grading standards has not been made. This applies not only to the criteria but also to tolerances (CREDICOOP apparently assumes 100% grade conformity, which is obviously unrealistic, since no provision is made in the informal standards for the percentage of out-of-grade product). Whatever the reason, an examination of the shipping documents raised some doubts about

the adequacy of present grading practices for the export trade. The documents included 24 examples in which different lots had been classified in the same grade and were sold at the same auction. In only 8 such comparisons was the price range (the highest price compared with the lowest price) less than 10 percent. In 8 of the 24 cases, the range was at least 20 percent, and in 2 cases the range exceeded 40 percent. While it is true that various factors may intervene in an auction, the large spreads arouse suspicion as to the adequacy of the classification system; i.e., the classification used by CREDICOOP may not fully reflect all the factors that the Argentine buyer considers. This calls for further study of Argentine buyer practices.

6. CREDICOOP exports to Buenos Aires covered a wide range of grade classes, not only the conventional grades but also defective grades such as misshapen, overripe and damaged. The relative Buenos Aires sale price for the conventional grades is shown in Table I. These are simple averages of the daily sales prices recorded from August 11 to October 10 compared with the corresponding price on the same day of Pintada Extra, which was the highest-priced and most-prevalent grade. It is evident that, compared with Pintada Extra (=100), there are severe discounts for Verde (green) fruits and Cero (small) size. Thus, per kg., the Verde Cero grade sold at only 58 percent of the Pintada Extra. (This assumes that the crates really averaged 25 kg. regardless of grades).

Comparable price information for the same period for the Asuncion market was not available since Government price reporting does not distinguish among grades and CREDICOOP local sales during the period did not report the grading. Exact price comparisons for the same period between Buenos Aires and Asuncion could not be made. However, an idea of quality discounts in the Asuncion market was obtained at the wholesale market (Mercado 4). That market is relatively sophisticated; the product is carefully classified even though grade names or numbers are not used. An inspection in the last week of June, 1981 showed that the best tomatoes on the Asuncion wholesale market were being sold at ₲1,900 per crate of 18-20kg., or the equivalent of ₲106 per kg. These were exportable grade: uniform, clean, about 10 percent pink and averaging 6.0 cm vertically and 7.5 cm across. CREDICOOP grading would put it in Pinton extra (the product was within the tolerances of U.S. grade No. 1 Large). Smaller size fruits of similar quality sold at the following discounts (Extra-100):

Table 3

Vertical Measures	Horizontal Measures	Size Class		Relative Price
		CREDICOOP	US	
cm	cm			%
6.0	7.5	Extra	Large	100
5.0	6.0	Primera	Medium-small	92
4.0	5.5	Cero	Extra-small	85

Comparing these discounts with those in Table 1, it is seen that compared with Extra(=100), the Primera discounts were similar and not large, but the cero discount was appreciably larger in the Buenos Aires sales than prevailed in the Asuncion market. This comparison suggests that, at some point, it may have been desirable to sell the lower grade fruit locally rather than in Buenos Aires.

7. Details of the procedure for making a decision on export cut-off is given in Annex III. The appendix consists of 3 tables as follows: (1) Decomposition of charges incurred in Buenos Aires and Asuncion into ad-valorem and specific (per crate) rates; (2) Summary of the results calculated in Table 1; (3) calculation of the net price received by CREDICOOP in Asuncion for the six conventional grades, based on Buenos Aires sales price less the ad-valorem and per-crate charges. The calculations in Annex III can be summarized as follows:

Table 4

Net price received by CREDICOOP on Buenos Aires tomato sales

By grades, 1980 marketing season

Color class	Size class		
	Cero	Primera	Extra
	(₲ per kg.)		
Verde	51	66	72
Pintada	80	100	107
Colorada	78	95	105

As explained earlier, comparable data for the Asuncion market in export-sale periods are not available, but the Ministry of Agriculture publication, "Informativo Sobre Mercadeo" for the period September 12 to October 10, 1980 (the period for which export prices appear) shows wholesale price ranges from ₲60 to 120 per kg. As follows:

Table 5

Year ending 1980	₲/kg.
September 12	75-80
19	90
26	70-120
October 3	60-80
10	60-70
17	70-80

A definite conclusion cannot be made from such circumstantial evidence for 1980, but there is a strong suggestion here that the returns in Asuncion might have been more favorable in some cases. It is advisable for the future to keep on top of the relative price structure in the two markets, so as to channel sales to the better market on an ad hoc basis during the marketing season.

8. The price spreads for export tomatoes are calculated in Annex IV for export grade. Based on CREDICOOP experience in 1980 and Buenos Aires wholesale purchase price (i.e., saleprice of the imported product) of ₲150 per kg. = 100, the differentials are as follows:

		₲ per kg	Percent
a.	B.A. Wholesaler's purchase price	151	100
b.	CIF, B.A.	117	78
c.	FOB, Asuncion, shipments by CREDICOOP	81	54
d.	CIF, Asuncion, received by CREDICOOP from producers	48	32

The differentials appear at first glance to be excessive. However, an examination of the detailed costs did not reveal any major opportunities for cost reduction, at least between Asuncion and Buenos Aires. In fact, the price equivalent shown on line ("c"), FOB Asuncion shipments by CREDICOOP, of

₲81 per kg. are approximately in line with the Asuncion wholesale market sale price for export-type tomatoes for 1980 as published in the "Informativo Sobre Mercadeo" of ₲60 to ₲120 per kg. On the other hand, the rather substantial drop at the CREDICOOP packing plant in Asuncion (line c vs line d) from ₲81 to ₲48 was occasioned by the large proportion of non-exportable produce. The tomatoes had been classified in the field by the farmers in most of the areas but the classification had evidently been highly inaccurate, as shown in the following summary of the reclassification grading:

Table 7

Grade	Kg.	Percent
Export	215,000	60
Local sale	55,301	15
Cull	91,127	25
	361,428	100

9. Grading inaccuracy was a major negative factor in the liquidation payments to farmers (the payments were made indirectly, through the local cooperatives). The initial expectations had been that non-exportable product would be about 10 percent; instead it turned out to be 40 percent. Some of the farmers complained strenuously to the authorities about the tight classification and CREDICOOP in some cases had to increase payments in excess of the amounts justified by the real

grades. In addition, the liquidation price for local, non-exportable grade, was higher than justified by the actual price they brought. The 55,301 kgs. in this grade sold for ₲1,702,794 gross or ₲30.79 per kg; the liquidation price to farmers was ₲30. Hence, there was practically no margin to cover costs of marketing the local product, in addition to the complete loss on handling the cull tomatoes. These costs had to come out of a reduction in the liquidation price for the exported product. Thus, the return to CREDICOOP for the exports was ₲81 per kg. but the liquidation price used was only ₲70.

It is evident that the large proportion of lower grade and cull product shipped to CREDICOOP was uneconomic. It would probably have been better to have sold the unexportable product in the producing areas rather than ship it to Asuncion. If this had been possible, the average price received by the farmers could have been significantly higher. The possibilities of improvement in this respect depend on devising a better grading system.

10. The spread between farm-gate price and CREDICOOP wholesale purchase price (liquidation price paid to farmers) could not be adequately investigated, because (a) the wholesale price data apply to last year's crop, for which production cost data are not available, and (b) the cooperative members are paid on a liquidation amount rather than by negotiated sale to a local buyer. However, there is another way to approach the real

problem, i.e., whether the liquidation price paid to the farmer is sufficient to be attractive to him. The liquidation price in 1980 for the Quiindy coop (where the Minifundia project for tomatoes is located) averaged ₲51 per kg. shipped (including all grades). The type-farm financial analysis shown in Annex II (Table 2B) is based on a weighted farm price of ₲58.6 in 1981, and this apparently resulted in a marginal net return of around 800 percent on the marginal investment, 250 percent on marginal cost, 72 percent on marginal gross income, and a threefold increase in family income (see Table 6 of Annex II). The marginal profit was 9 percent of tomato sales (Annex II, Table 7, line 9). If the 1981 crop is liquidated at the ₲51 amount of 1980, the marginal return would be less, but still apparently very attractive, judging from the following recalculation of Tables 6 and 7 in Annex II:

Table 8

Marginal rate of return

Concept	Traditional return (%)	Liquidation Price of ₲58.6/kg (%)	Liquidation Price of ₲51/kg (%)
Profit/Investment	91	840	685
Profit/Cost	87	253	206
Profit/Gross Income	50	72	58
Marginal Profit/ Tomato Sales	-	69	64
Family Income per Capita (₲1,000)	48	161	140

Thus, even at the lower price, rates of return would be high and per capita income would more than double compared with traditional farming, so that there should still not be a marketing price constraint at the producer level.

11. The current CREDICOOP marketing goals are judged not likely to have an adverse impact on prices. The crop to be marketed through CREDICOOP in 1981 is being estimated at about 500 tons, with 350-400 tons exported, 100 tons sold domestically, and the rest discarded. Current total production figures for Paraguay were not available, but 1980 exports were officially reported at 16,000 tons (additionally, significant quantities are said to be exported without registration). Domestic disappearance in 1976 was estimated at 12,000 tons (later estimates not available). The anticipated CREDICOOP exports would be less than 3 percent of total exports and its marketings less than 2 percent of total disappearance. These quantities are too small a share to influence prices.

12. The recent devaluation of the Argentine peso by 30 percent (June, 1981) has been giving considerable concern to Paraguayan exporters, including CREDICOOP. At this moment, the impact cannot be judged. Alternatives are that: (1) Argentine peso prices will not increase, which would narrow import margins and therefore impact adversely on Paraguayan export incentive; (2) Argentine peso prices will increase fully to offset the devaluation, which would restore present import margins but impact adversely on Argentine demand unless

personal income there increases equivalently; (3) the Argentinian government will adopt measures to partly offset the shrinkage in import margins without stimulating peso price increases; and/or (4) the Paraguayan government will adopt measures to decrease export marketing costs. Among the specific measures mentioned by trading groups (but not by the governments at this time) are:

- Reduction in the Argentinian import duty (3 percent ad-valorem for tomatoes);

- Reduction in the officially determined declared value;

- Reduction in the Paraguayan import duty or the tax on foreign-exchange earnings

- Reduction in the minimum price, i.e., the value per kg. that is required to be converted at the official exchange rate (for tomatoes, US$0.35 per kg. @ ₲126 per US$.); and

- Devaluation of the current free rate or increase in the official rate.

The recent devaluation is only the latest of several that the Argentine government has imposed in recent years. The trends in past export volumes and prices relative to these devaluations might therefore provide some guidance on the market

reaction under such circumstances. The relevant data are as follows:

Table 9

	Unit	1978	1979	1980
enos Aires wholesale price per kg., Aug.-Sept. simple average[1/]	Pesos	450	1,820	3,132
Exchange rate per US$, August - September[2/]	Pesos	822.3	1,397.5	1,897.0
Equivalent B.A. price per kg.	US $	0.55	1.30	1.65
Paraguayan annual exports[3/]	1000 tons	2.2	3.3	16.2

1/ August-September data used since these months comprise the principal period for Paraguayan exports.

2/ Exchange rate reported by IMF.

3/ Monthly export data not available.

It is obvious from the above tabulation that the Argentine devaluation was more than offset by wholesale price increases in both peso and dollar denominations, and that during this period, Paraguayan exports increased several fold. If past performance can be taken as a guide, it would seem that the current Argentine devaluation is not likely to be a serious deterrent to Paraguayan tomato exports after the initial adjustment period.

D. Problems and recommendations

An established marketing structure exists for both domestic and export sales, and CREDICOOP utilizes the service of one of the principal tomato wholesalers to advise in its operations. Therefore, no general problems exist in marketing the CREDICOOP product. In broad terms, CREDICOOP should continue to align its procedures to established commercial norms. However, certain problems peculiar to CREDICOOP, as a cooperative marketing organization, were noted, problems that do not exist for a wholesaler that buys and pays the producer for the product or sells on a negotiated commission. In addition, CREDICOOP should be able to benefit from its strong marketing position as controller of a large product volume. The problems and opportunities detected in these respects are discussed in the following paragraphs.

1. Farm price liquidation procedure. In 1980, CREDICOOP had a major problem in the liquidation procedure. Some of the farm groups were dissatisfied with the prices they were paid.

These prices were calculated in accordance with product classification made in Asuncion by CREDICOOP and the respective net sale prices of the grades. The farmers were expected to ship largely export grade, but in fact much of the product did not comply with CREDICOOP standards. This variation between the farm and CREDICOOP classification was the cause of the problem, because when the farmers were informed of the Buenos Aires sale price (about a week after sale), they expected larger payments than they actually received at the final liquidation (about 3 months after sale). Our recommendation, arrived at in discussions with Sr. Talavera, is to reorganize the procedure as follows:

a. Adopt a policy of using "double grading," i.e., producer grades and wholesale grades. This results in the payment of producer grades at "blend prices" as will be explained below.

b. Producer grades and standards should preferably be uniform among cooperatives, but this is not essential. That is, CREDICOOP should try to induce the adoption of uniform producer grades but be prepared to accept variants in the grading standards. However, grading by individual farmers within an individual cooperative should be based on consistent standards and criteria. The farmers should be instructed on the classification standards that their individual cooperatives decide to apply.

c. Producer classification should be checked at the point of origin by the coop buying agent. He should inspect and, along with the producer, adjust the grading. If the producer's grading is seriously in error, re-grading may be desirable. A formal receipt should certify the number and weight of each producer grade, and this receipt should be signed by the farmer and the agent. A registry of these data should be maintained by the coop.

d. Each crate should be identified with the producer number, the weight, the grade, the coop identification and the agent's number (or name). The last point should be observed since different buying agents may be inconsistent in their producer grading.

e. The crates for each agent and producer grade should be bunched for all producers at the Coop level for each shipment to CREDICOOP. There is usually just one agent assigned to a single coop; and when this is the case, the agent and coop identifications will be synonymous. This level of bunching means that individual farmer grade differences will not be maintained at the CREDICOOP grading level, but that deviations in classification by different agents can be detected.

f. At the CREDICOOP packing plant in Asuncion, the crates of each agent (or coop) should be reclassified by producer

grade into wholesale grade, and a reconciliation registry maintained.

g. Wholesale-graded product should be bunched for all agents and coops.

h. A registry of quantities and prices by wholesale grades should be prepared for each sale period (in 1980, CREDICOOP synthesized export prices into 3 sales periods).

i. The final sales prices by producer grades should be decomposed and synthesized into weighted producer-grade price equivalents for each shipping period for each coop or agent (if more than one agent in a coop). The individual coops should be informed of the weighted producer-grade prices.

j. Each coop would synthesize the individual farmers' blend price from the weighted producer-grade prices and the signed receipts cited at step (c) as to quantity and producer grade.

The above-described blend-price procedure should have the effect of taking the heat off CREDICOOP since the blend price of each agent or coop will be separately determined in accordance with the accuracy of the producer grading. Such farmer complaints as may occur would be focused instead on the local

agents. In order to stimulate more accurate and stricter grading by the buying agents, a bonus might be offered to them when the producer grading conforms closely to wholesale grading. They should be permitted, if they so desire, to be present at the reclassification to wholesale grades by CREDICOOP in representation of their own interest and that of their respective producers; this would provide them with the assurance as to shipment identification and reclassification accuracy.

2. Reconciliation of Asuncion-Buenos Aires grading. The marketing and grading procedures in Argentina should be more carefully studied to reconcile grades, including tolerances, and to determine the reasons for price-inconsistencies in the same day for shipments bearing the same CREDICOOP grade. If Argentine producers use official government grading, a copy of the standards should be obtained and used if possible. Regular reports should be received from the Buenos Aires representative on product quality, etc., and especially the reasons for price discounts.

3. Domestic price-margin analysis. A more effective price-reporting and analysis systems should be established. At present, the Ministry of Agriculture and Livestock reports wholesale and retail prices weekly, but without reference to grades or precisely at what point in the marketing channel. This makes the reports of little practical use. CREDICOOP should arrange with the Ministry for price reporting by

variety and grade (including defect and tolerance standards) at such sales points as: (a) "acopiador" (trucker-buyer) sales to wholesalers, (b) wholesale sales to intermediaries, (c) intermediary sales to retailers, (d) retailer sales to consumer.

Since the cooperatives have to compete with commercial marketing channels starting at the farm gate, the price reporting should be extended on a regular basis to the producing areas. The cooperatives in the areas should report farm-gate sale price to "acopiadores" and for sales in locality, also by grade, and coop handling costs to Asuncion. When combined with the information obtained in Asuncion, CREDICOOP will be in a position to establish cost-control limits on its own marketing and improve its competitiveness.

Such a procedure will require the preparation of uniform, written grading standards and the training of key personnel in applying the standards. For this purpose, the producer and wholesale market standards used in Argentina (if such exist) and in the United States should be used in conjunction with present CREDICOOP informal standards. A copy of the U.S.

standards is attached as Annex V. Another publication of the U.S. Department of Agriculture gives Inspection Instructions for tomatoes (Combined Market and Shipping Point).[1/]

Analysis of price margin data (for tomatoes and other products as well) should be performed by an individual assigned this task in the Commercialization Department, so that the analytical results can be applied directly to making marketing decisions.

4. Export price margin analysis. Decisions on the choice between export and domestic sale should be based on a daily comparison of the Buenos Aires and Asuncion market prices by variety and grade, using the ad-valorem and specific cost-discounting factors described in Annex III. As an example, for 1980 factors applied to a Buenos Aires price of 60,000 Argentine pesos per crate for Colorada Primera (the price paid for 97 crates sold in Auction No. 17 on September 25, 1980), the Asuncion net calculates as follows:

1/ Inspection Instructions for Tomatoes, Food Sagety and Quality Service, Fresh Products Branch, USDA. February 1975. $10.80.

B.A. price/crate	60,000 pesos
Converted at 1,900 and 126	¢3,979
B.A. price/kg.	¢ 159
Less 1980 ad-valorem factor of 29.55%	¢ 112
Less 1,4800 specific factor of ¢25.40 = Asuncion net/kg.	¢ 87

Thus, for this example, ¢87 per kg., was the marginal, or "threshhold" price. If the net price in the Asuncion market for this grade equalled or exceeded ¢87 per kg., the product should have been sold locally.

For the 1981 crop, revised discount factors should be calculated, based on the procedure shown in Annex III, Table 1. It should be noted that this kind of marketing decision requires: (a) daily price intelligence and (b) accurate grading.

5. Export market alternatives. It would be advisable to investigate alternative ways of marketing in Argentina other than in the Saldia auction, as was done in 1980. Once CREDICOOP has sufficient volume, it might employ a sales representative on commission to sell for direct consignment. Shipment in consumer-type packing is another possibility that is now usual for large supermarket chains. These procedures require (a) CREDICOOP adoption of formal grading standards, published for

Argentine clients, (b) accurate grading, (c) investigation of packaging and other presentational requirements, (d) development of close and confident seller-buyer relations, and (e) independent superintendency certification. For the latter purpose, it is noted that the South American Controlling and Superintending Co. S.R. Ltda. (CONTROLCO) of Buenos Aires also has offices in Paraguay. Further it should be noted that Argentina may also have sanitation standards (such as acceptable residue levels) for consumer-type packing.

6. Labelling. While the present CREDICOOP export label is attractive, it is not as effective in promoting the product as it might be. The largest type on the label only says "Selected Fruits." A good advertising agency should be able to come up with a label that will (a) promote sales, (b) identify the CREDICOOP product as unique (like a registered brand name), and (c) stick in the buyer's mind. Product recognition would also be enhanced by registered personifications, such as the face of a smiling "Paraguayita" that gives the consumer a happy feeling when he sees the product displayed.

7. Crates. Last year's shipping crates were made of an attractive, light-colored wood. However, the slats were rough and need to be better finished to avoid splinters. The nailing was poor, causing serious splitting of the slats; heavy staples may be preferable with the wood used (Guatambu).

However, despite these defects, CREDICOOP does not report any criticism of the packing from Buenos Aires buyers.

8. Palletization. Export tomatoes are loaded in trucks with capacity for approximately 500 to 1,100 crates, depending on truck size. The cargo is protected by plastic canvas. All loading is manual. Once CREDICOOP is in its own packing house, palletization and forklift loading is likely to be more economic, reducing costs in both Asuncion and Buenos Aires. Palletization at the latter point still requires investigation as to feasibility and financial benefit.

9. Field agents. The price-spread data show a heavy discount for green or small fruit. Also misshapen and overripe fruit is discounted (the relative prices for fruit with these defects were not specifically calculated for this report). The amount of less-desirable grades and types shipped by the producers in 1980 cannot now be determined since the sales in the domestic market were not reported by grade. However, Dr. Talavera's memorandum dated February 5, 1981 states that the latter sales were of non-exportable quality. In all, there were 361 thousand kg. received by CREDICOOP, of which 120 thousand kg. were the preferred grades (Primera or Extra, and Pintada or Colorada). Thus only one-third consists of these top qualities. Out of the total, 146 thousand kgs., or 40 percent, were not exportable (sold locally or discarded).

While some of this loss is unavoidable, much of it can be overcome by closer supervision of the farmers at harvest time. The cooperatives should have field agents well trained in quality requirements to advise their coop members on harvesting. This is especially effective to avoid the harvest of green product. In fact, in some countries, it is usual for the packing plants to employ field agents to instruct the farmers exactly what days to harvest according to the condition of the crop. For CREDICOOP, this function can be performed by the buying agents described earlier.

III. BANANAS

A. Survey procedure

The cooperative in the Minifundia project this year for bananas is at Coronel Oviedo, Loreto, and Atacurubi de la Cordillera. The plantings were made at the end of 1980, with the first production expected to start one year later. In order to prepare a type-farm simulation to test for financial constraints at the producer level and obtain information on marketing, a visit was made to Coronel Oviedo. The cooperative official in charge, Ing. Herberto Gonzalez, selected a farm considered to be typical of the minifundia farmers in the program for the simulation analysis. The bananas had been planted on this farm but were not yet in production. To obtain the production and marketing data for the simulation, producing plantations were visited at San Lorenzo and Nemby. Marketing at Asuncion was observed mainly in Market 4. About 10

wholesalers, intermediaries and retailers were visited in the company of the market administrator, Carlos Benitez Figueredo.

B. Marketing structure

A description of the structure of the banana market is given in Annex VI. This is based on the prevalent varieties, Oro and Carape (Lady-finger types long established in the market). These fruits average approximately 10cm. and 15 cm. in length respectively. A newer variety, Nanicao (also known locally as Montecristo) is now preferred by farmers visited during the study. These fruits are about the same length as Carape or slightly greater, although in the market they are not usually distinguished from Carape.

The varieties recommended for the Minifundia project (Misuri or Lactan) are said to produce still larger fruit, up to about 20 cm. long. But practically none of these are on the market, so their prices and marketing potential are largely conjectural. As is pointed out in Annex VI, larger size does not necessarily mean higher price; e.g., the larger Carape variety was selling in case lots at ₲40 per dozen and the smaller variety at ₲60, due to consumer taste preference.

C. Conclusions on the marketing situation

1. Financial feasibility at the farm level may be a serious constraint on the marketing of bananas produced by the project. This indication was obtained by type-farm simulation analysis, i.e., a survey of the financial structure of a "typical" farm using the traditional crop program and then superimposing on this structure the financial results of the revised banana program. It must be strongly emphasized that in the time available, it was possible to apply this procedure only to a single farm in one cooperative area (Coronel Oviedo), using simulation parameters obtained from several farms in the major producing area near Asuncion. Hence, the results should not be considered definitive. But they are clearly indicative and should at least be taken as a warning. The significant comparisons are as follows (see Annex VII for details):

Table 10

Productivity Measure	Unit	Traditional	Revised	Marginal Benefit
Family income, per capita	¢	84,006	95,676	11,670
Family income, per capita	US$@ ¢140 rate	600	683	83
Profit as a percent				
- of investment, excluding land	%	176	172	154
- of cost	%	196	211	358
- of gross income	%	66	68	78

The above data indicate that the 1/2 hectare of bananas on the type-farm can be expected to increase per capita income by only $83 per year, a fairly insignificant improvement. The productivity ratios shown in the lower part of the above table are rather similar comparing the traditional and revised cropping; the inference is that bananas are about as profitable as the other crops but "no big deal." The interpretation of the marginal-benefit column can be stated as follows: (a) ¢1 of investment with the banana program will yield less profit (¢1.54) than has been obtained with the traditional cropping (¢1.76); (b) ¢1 of cost with the banana program will yield more profit (¢3.58) than has been obtained with the traditional cropping (¢1.96); and (c) 1¢ of gross income (i.e. sales) with the banana program will yield somewhat more profit (¢0.78) than the traditional cropping yields (¢0.66).

It may be that further type-farm analysis in the Coronel Oviedo area and in the other program areas (particularly those farther north where low winter temperature is not as serious a problem) will modify the rather pessimistic indications given above.

2. The domestic marketing structure for bananas is well developed and highly functional. However, exports are a minor aspect of present marketing (see below for further observations on export potential). The following observations were made in regard to domestic marketing in Asuncion:

a. Producers generally ship the Oro variety in green bunches. The Carape and Nanicao varieties are cut into hands on the farm and shipped green in crates. The fruit is ripened by the wholesaler or "acopiador" either in chambers with ethylene gas (ETIL5 imported from Brazil) or in covered piles. The wholesaler cuts the Oro bunches into hands after ripening. The several variations in these procedures (farm ripening, direct producer sale, cooperative marketing, etc.) exist side by side and are not judged particularly significant to CREDICOOP's future marketing of bananas.

b. Grading is an important factor in price determination. There are no formal grades but all elements in the distribution channel (from producer to retailer) are aware of the informal ones that rule. The better quality

fruit (larger and cleaner within the variety) will generally sell 1/3 to 1/2 more than the poorer, and ungraded fruit is price discounted. The wholesalers and intermediaries usually classify into two grades and the retailers into three grades. The fruit is generally free of physical damages (pole abrasion is a frequent defect on the farms), and that which reaches the market is discarded (some of it may possibly be sold at a large discount, but we did not find any such instances at the market).

c. Freeze burn is a common defect in the winter months. If the fruit is exposed to freezing (or near-freezing) temperatures, burn becomes severe, especially on the fruits on the exposed surfaces of the crates. This damage severely affects price; bananas spotted over 100 percent of the surface with about 25 percent of the total area black were found to be selling at 2/3 to 1/2 of the price of relatively clean fruit. On the other hand, almost all fruit being sold in the market is discolored to some degree; clean, yellow bananas such as are often in European and U.S. markets, seem to be unusual in the Asuncion market. To some extent, the tendency toward discoloration is a varietal factor, but the variety that is said to be prone to discoloration (Oro) is preferred because of its excellent taste. For this reason, even severely discolored fruit of this variety is salable.

d. Seasonality in supply is not severe. There are bananas on the market all the year, although the winter months reduce fruit set. This decreases supply at the turn of the year. The Carape variety is particularly affected according to some of the wholesalers interviewed. Since market arrivals are not reported, seasonal supply variations could not be objectively determined. However, a limited degree of supply seasonality can be inferred from the seasonal price variation.

e. Price spreads are rather substantial. In regard to fruit size, "large" fruit within the same variety sells at the farm for about double the price of the "small" grade. In the producing area near Asuncion (San Lorenzo and Nemby), the farm price per dozen for Nanicao bananas (Carape in the market) was averaging ¢25 for small and ¢50 for large. The former ran about 12-14 cm. in length, the latter around 16-18 cm.

Substantial price spreads were also noted geographically. The producers near Asuncion reported farm sale price per dozen green as much as ¢35, those near Coronel Oviedo only ¢15-25. This difference is partly explained by hauling distance differentials, but sales volume is probably an additional reason.

The subject of price differentials was only examined superficially due to lack of time. But it seemed likely

that more precise study of this subject could be useful in maximizing farmer returns in the minifundia program.

3. Paraguay exports limited quantities of bananas, principally to nearby areas of Argentina. Inquiries in the Asuncion wholesale market indicated that there is little interest in exporting to Buenos Aires, which is supplied with better-quality fruit originating in the tropical areas of Brazil and elsewhere. Compared with the type of banana that prevails in sophisticated world markets (about 22 cm. long, clean, bright yellow, and thick-skinned), the Paraguayan product is clearly inferior in size, appearance (although not in taste as it is excellent in that respect) and shipping quality.

D. Problems and recommendations

Despite the long history of banana production in Paraguay, it seemed from what we were shown that there is little solid research information from the National Agronomic Institute (IAN) and outlying farm-adaptability tests to support recommended practices. This appears to be true of varieties, pest control, cultural practices (fertilizers and thinning), etc. Additionally, there have evidently been no marketing studies of the fruit produced with recommended technology. Under these circumstances, it is prudent to base judgment of project expectations on farmers' actual experience with their current practices while moving ahead with research and adaptability trials in the hope of eventually being able to increase profitability. Given this judgment, our conclu-

sions and recommendations, as outlined below, for marketing of CREDICOOP-sponsored production reflect a rather conservative approach.

1. Emphasize established domestic markets. The quality of Paraguayan bananas, as now offered in the Asuncion market, is not likely to be competitive, in Buenos Aires or other sophisticated foreign markets, with fruit from established international sources. This judgment is based on our examination of the product as offered in Paraguay in comparison with the type of banana going into world trade. It is interesting that a similar conclusion was stated 15 years ago by Ing. Luis Alberto Alvarez, who interviewed dealers in Buenos Aires (published in Critica y Analisas 3(11):13 1965). There is a possibility that this judgment may change in the future if the newer IAN varieties come onto the market, but we do not believe this likely in view of the climatic limitations associated with the country's sub-tropical latitude. (The Coronel Oviedo area, for example, is at 25½° South latitude, comparable with Orlando, Florida, and Corpus Christi, Texas, in the northern hemisphere.)

The most attractive markets for CREDICOOP sales are Asuncion and other destinations in the southern part of the country where local banana production is marginal. This would also include small-scale marketing at Argentine border points. CREDICOOP's marketing volume will be so minor a portion of

total domestic volume that it should have no price impact at the target destinations.

2. Test for marketing constraint at the farm level. The simulation study raises some doubt as to the financial benefit at the farm level of stimulating banana production, with the objective of overcoming poverty on small farms. The results reported here, while extremely tentative, do suggest caution in stimulating the banana program further until the issue of farm feasibility is examined carefully. We recommend this matter be given top priority over the next few months.

The procedure for collecting the data used in type-farm simulation analysis was demonstrated to CREDICOOP and AID officials. COLAC survey data may also be useful for this purpose. The compilation of similation data is shown in the Annex VII example. We recommend that separate simulations be made for the three cooperatives now scheduled for the banana program, since the feasibility results may be quite different, especially in the Loreto area.

The simulation parameters should be obtained from surveys of good banana producing farms situated as close to the target coops as possible; in addition the banana hectarage should be the same order of magnitude as that scheduled for the program (at present, up to 1 hectare). It should be noted that the simulation parameters refer only to the banana component of the farming structure, so the rest of the farm economy can be

disregarded in this survey. The number of farms to be surveyed should be decided in light of the variation in banana income per hectare, as actually deduced. If fairly consistent results should emerge, probably 3 to 5 farms should be sufficient. Since the final objective is to test for very substantial increases in farm income from the banana program, a high degree of statistical precision is not needed. The main point is that the simulation parameters must reflect real farm practice on average good farms, not theoretical recommendations (although the latter can be used as parameters for so-called "sensitivity analysis" in a separate exercise, to judge their potential effect on marginal farm income), and they should be sufficiently consistent to permit an informed judgment of financial outcome.

The selection of the model of a type farm is usually a simpler process, since there should be background information on the Coop members who are expected to enter the banana program (target farms). The selection rules are: (1) decide on the approximate average farm size of the target; (2) identify several farms of this size; (3) among these, eliminate any whose overall standard of living appears to be atypical (like owning an automobile) indicating that they have unusual sources of family income; (4) among the remaining farms, eliminate any that have other obvious atypical pecularities (like no children or an extremely large number of children). The simulation interviews should be done separately for each farm. The interviewer must be especially careful to note

whether the addition of bananas signifies (a) reduction in some traditional crop (it usually does), and (b) further hired labor requirement (usually the farm family can take on the extra banana production without hiring additional outside labor, since bananas do not have a high labor component, as is the case with tomatoes or strawberries). The simulation interviews should first be tried on 3 farms selected as above. If a clear marginal family income conclusion is evident, further interviews will not be needed. It should be noted that the answer sought is not the precise average income effect, but only if the effect is large enough to be highly significant.

We suggest that these studies be completed in the next several months. (They will require 2 to 3 weeks of work). Based on the findings of these studies, it will be possible to determine which cooperatives have feasible banana programs, and which do not, and which programs should be delayed pending further technological advancement in production or marketing.

If the study indicates a relatively unattractive farm return from the banana program, a simulation should be considered for intercropped bananas and pineapple, a practice we noted in some producing areas. For this simulation, new productivity parameters would be obtained, from fields having such intercropping (i.e., not by interposing parameters obtained for each crop separately).

3. Develop and use defined grade standards. Bananas are sold on the domestic market by informal grades, based on variety, size and defects, while damaged fruit is normally not on the market. CREDICOOP should develop clear, written standards to be used in a variety of ways, some of which are described in recommendations described below. The grades and standards to adopt should be decided by price differentials observed in the Asuncion market as well as in the markets of producing areas (because certain low-quality fruit may not be shipped to Asuncion or may be discarded). Our observation in the current study period (June) identified price differences for 2 varieties, 2 sizes at wholesale, 3 sizes at retail, and possibly 3 degrees of discoloration (not well defined). At other periods of the year, other price differential criteria might be apparent. The U.S. Department of Agriculture wholesale grading standards for bananas should be obtained to help develop local standards.

4. Establish a price-reporting systems by grades. The present SAG price reporting for bananas is totally inadequate for marketing decisions. Prices are being reported now only for variety (2 classes) and at two levels (wholesale and retail, but without definition of these levels). Discussion should be undertaken with SAG to expand the reporting by (a) adopting written grade standards, (b) collecting price and, if possible, volume information separately by grade, (c) covering sale prices at the trucker, wholesaler, intermediary, public-market retail, and supermarket retail, (d) distinguishing

prices for green and ripened fruit within grades, (e) adding other net-consuming markets in the South, that can become outlets for CREDICOOP products, like Encarnacion, and (f) adding selling prices by grades in CREDICOOP's production areas at the farm and marketing levels.

The program sounds ambitious, but it can easily be accomplished once clearly defined grades are adopted. At the production centers coop officials might serve as officially-appointed reporters. Our observations indicated that prices in the market are highly consistent among dealers for the same quality, so extensive surveying should not be required.

5. Base sale-channel decisions on market price differentials.

The price and grade information described above should be synthesized into a matrix that will facilitate CREDICOOP marketing decisions. Depending on the price differentials, lower grades and qualities may at times be better sold locally, or sent to other nearby markets rather than Asuncion, or discarded. In order to operate such a procedure effectively, and thereby increase farmers' blend prices, the bananas would have to be graded at the producer level (as the "acopiador" now does in many instances when buying from farmers) and possibly reclassified by the coops to wholesale grading. At that time, CREDICOOP can use the price information (along with distribution cost margins), to advise the coops in each instance where the stocks are likely to bring the most attractive price.

6. Test market IAN experimental production. A major question mark for the banana program is the financial benefits from the improved varieties. As the plots start yielding, not only should the usual production data be gathered, but additionally, the product should be graded and crated in the usual commercial way, and each grade priced at an appropriate and comparable level in the Asuncion market (probably offered green to intermediaries). The sale price data should then be discounted back to the farmer level, and these new yields and prices plugged into the simulation analysis. It is urgent that the test marketing of the experimental plots be started as quickly as possible, since the entire banana program may hinge on the outcome.

There was some observational evidence that fertilizer may influence not only fruit yield but also its grade. Hence actual test marketing should also be done on production from fertilizer trials, as well as from any other experiments in which fruit quality may be affected.

7. Avoid the cost of marketing damaged fruit. At the risk of being too obvious, we want to emphasize the importance of avoiding fruit damage and the cost of handling damaged fruit. At the farm level, a common damage was pale scar. Such fruit should be culled out at the farm and not accepted by the coop buyer. Another type of damage was discoloration due to cold or freezing temperatures. This can occur at any point in the distribution channel. When packed into crates, sometimes only

the surfaces exposed to the air are blackened, while the interior fruits are unaffected; yet such crates were found to be selling at a considerable discount. In areas where frost is a peril, the coop should have a protected shed for storing the fruit.

VI. STRAWBERRIES

A. Survey Procedure

At the farm level, production technology, marketing and financial results were surveyed at Aregua, a major producing area, and visits to farmers near Nemby that were producing stalons of a newly introduced variety (Campinas 2712) under arrangements with CREDICOOP.

Marketing was discussed with small traders at Market 4 and in the supermarkets. At that time (June), there was no domestic fruit on the market, but a small shipment of Brazilian strawberries had arrived and were being sold by intermediaries to retailers.

Feasibility at the producer level under the CREDICOOP could not be examined since a decision on the selection of the cooperative had not yet been made. Hence, a type-farm simulation could not be made, as was done for tomatoes and bananas.

Since export of strawberries to Buenos Aires is a distinct possibility, seasonal prices were obtained from the wholesale market

there. However, other information essential to assessing the market potential for Paraguayan strawberries in Argentina were not obtained.

B. Marketing Structures

1. Origins

Strawberries are a highly seasonal item in Paraguay. First coming on the market in early July, they reach a peak in August to November, then decline through January. From February through June, there is practically no domestic production available. In May and June, limited quantities are imported from Brazil. The domestic product comes from areas near Asuncion, Nyamby, San Lorenzo and Aregua. No reliable statistics are available on the total area and volume of production.

2. Varieties

The prevalent variety is called Florida or Margarita. It seemed to be a small size Florida 90 or a mixture. CREDICOOP is now reproducing some 250,000 plants of Campinas 2712 under arrangement with farmers for increase. Also, at the National Agronomic Institute (IAN) research station, there is a replicated variety trial of 5 varieties and 100 plants each of 6 varieties obtained from Florida and California. The market-quality performance has not yet been determined.

3. Farm Marketing

We were not informed of any large-scale producers. The strawberry plots on a farm are usually under 1 hectare, although some larger plots exist. The crop is picked half green and loaded into baskets of 12-13 kg capacity. The larger growers haul into Asuncion and sell to dealers in the market; a few of the very small ones peddle door to door. However, the commercial producers generally sell to "Acopiadores" who truck the baskets to the urban markets, sell the produce and return the baskets to the farmers the following day. The fruit is ungraded and the little we saw was very poor field quality. The berries ranged in length from 1 cm to 3 cms and in stages of maturity varried greatly.

4. Consumer Marketing

The truckers usually sell to retailers or in the city market, or sometimes to small intermediaries. No grading is done. There are no strawberry wholesalers.

5. Imports

Fresh fruit is imported in limited quantity by truck from Brazil. It is packed in small styrofoam trays or baskets, of 250 kg capacity each, and is protected by a cushion of shredded polyethylene excelsior in the bottom of the box. The styrofoam trays measure about 11x9x5 cm, and are transported 8

each in a light crate measuring 44x27x8½ cm (outside dimensions). The individual trays are not wrapped in polyethylene film. The crates bear an attractive label giving the origin and quality (Cooperative de Citia, ITU, Morongos CAC, Extra AAA). The fruits are about 1/3 green, conical, and measured approximately 2½ by 3 cm long. These berries would exceed the minimum size for U.S. grade No. 1 but, due to their green state, would grade out as No. 2's.

6. Prices

Farm prices at the start of the season (end of June, start of July) are relatively high, ¢300 per kg, but rapidly decline to as low as ¢100 per kg. Illustrative price margins per kg are as follows:

- Farmer sale to trucker	¢100
- Trucker sale to retailer	¢200
- Retailer sale to consumer	¢500
- Supermarket sale to consumer	
- in ¼ kg polyethylene bags	¢600

Brazilian strawberries, packed as described above, trade at about twice the price of the domestic product at the retail level. Hence, the imports are sold only in the period before the local berries come on the market. Prices observed at the end of June for Brazilian strawberries were as follows:

	Per tray*	Per kg equivalent
- Trucker sale to dealers in the city market	150-162½	500-650
- Dealer sale to consumer	175-187½	575-750
- Supermarket sale to consumer	250-300	850-1200

* 250 to 300 grams

7. Exports

There are no appreciable exports of Paraguayan strawberries. The official export statistics do not report strawberries as a separate category.

We were unable to find anyone in Asuncion acquainted with strawberry marketing in Buenos Aires. However, we were able to obtain wholesale prices of fresh strawberries through the American Embassy in Buenos Aires. The marketing period seems to extend from around July to December. The prices seem to be about double those in the Asuncion market, although a clear comparison is not possible due to differences in the marketing procedures (Paraguayan strawberries are not sold wholesale).

The early marketing at relatively high prices in 1978 seems to be anomalous. It is suspected that these prices are for imported berries, since domestic production is not likly to be on the market in June.

C. Conclusions on the marketing situation

1. Financial feasibility

Financial feasibility at the farm level is judged, tentatively, to be highly favorable. The judgment is tentative because the target cooperative and farms have not yet been chosen, thus precluding type-farm simulation analysis at this time. However, the simulation parameters derived from a 0.22 hectare strawberry plot appear very favorable (See Annex VIII).

Simulation Parameters

Plot size	0.22 hectares
Net income	¢182,000
Family farm income	¢392,000
Family farm basis	¢1,038 thousand or U.S. $7,600 (¢392,000 for 0.22 hectares + ¢182,000 per 0.22 hectares for the remaining 0.78 hectares).

We therefore conclude (subject to completion of the type-farm selection and simulation) that financial feasibility is not a constraint on the production and marketing of strawberries).

2. Market Development

The strawberry market is primitive, barely more than "household" operations. The fruit is being sold in very small

quantity, although the amount marketed is not known. The Fretes-Vendre report indicates that the total strawberry area in Paraguay is around 50 to 75 hectares. While this is little more than a guess, it is sufficient to indicate that CREDICOOP's projected program of some 50 hectares could have highly significant effects on the market. Its success will depend on developing much larger and more diverse market outlets than those presently exploited. If this is not done the price effect on current producers is likely to be disastrous.

3. Potential Market

The potential for domestic consumption of fresh fruit during the graduation season is unknown since price-supply/demand data are not available to determine price elasticity. Given the existing reporting organization, such data cannot be expected to emerge in the near future. Prudence suggests that top priority should be given to finding new and non-competitive markets for the anticipated additional products vis-a-vis present production. If this is not accomplished, CREDICOOP will run the risk of breaking the market of current produces with whatever political repercussions this could provoke.

4. Untapped Markets

There are several untapped markets that have been noted. The most apparent ones are: (1) export of fresh fruit to foreign

destinations like Buenos Aires and Montevideo during the early part of the production season (July and August); (2) sale of frozen strawberries domestically, primarily in Asuncion, for direct consumer sale in the 7-month period when few or no fresh berries are on the market; (3) sale of conserved or frozen fruit of lower grades or excess quantity for domestic manufacturing as jam, etc., and ultimate sale though industry in domestic and export markets; and (4) production of high-quality fresh fruit that will command a premium price over present qualities. Observations on each of these four market possibilities are given in the ensuing sections.

5. Export Market

Practically nothing is known about the potential for sale of fresh strawberries exported from Asuncion to Buenos Aires and Montevideo. The farm-run berries sold in the Asuncion market are without doubt unsalable abroad. CREDICOOP, if it is to export, will have to produce not only improved varieties, but also mature, severely-culled berries. The fruit will have to be at least as good as the Brazilian product seen in the Asuncion market, and probably better.

6. Frozen Products

There are no strawberries available on the market for the first half of the year. Therefore, the sale of frozen berries in consumer pack is worth considering. However, there is

apparently no frozen-food industry in the country, so the technology is practically unknown. On the other hand, commercial small-size freezers, mainly for ice cream, are common, as are household refrigerators with freezing compartments. Thus, marketing of frozen strawberries to stores and consumers is not inconceivable. The production of frozen berries will require, in addition to freezing equipment, a sophisticated grading, cleaning, and inspection system, involving careful control, starting in the producers' fields.

7. Conserve Industry

There appear to be only questionnable prospects for sales to the conserve industry. The domestic production of jams and jellies is very limited, and the products are poor quality. Strawberry preserves containing whole or pureed berries, as commonly manufactured in Europe and the U.S., are not produced in Paraguay. Almost all conserves are imported, mainly from Brazil and Argentina. A major deterent to local production is the lack of industrial quality strawberries which would normally result from the sale of better grades for fresh fruit consumption. An important consideration favoring the development of a strawberry conserve industry is that Paraguay is a large producer of sugar. There is a well-developed ice cream industry, but strawberry flavor is fairly uncommon due again to the berry supply situation.

8. High Quality Fresh Product Marketing

The current sale of selected Brazilian products in Asuncion, offered in consumer packs at about double the price of domestic ungraded berries, indicates that there is a market for good quality produce. The market volume cannot really be judged at this time, although sale of limited quantities (e.g. 1000 trays of ¼ kg each) should be feasible. Grading, packing, and general presentation should be similar to the Brazilian commodity.

9. Common Assumption

The above considerations all involve an assumption of common anterior knowledge of production grades, price preference, transportability, dessert quality and freezing quality of the recommended varieties. In fact, the performance of the varieties under test and in reproduction beds has not been determined for Paraguayan conditions. These factors will have to be determined before a prudent marketing strategy can be devised. The plant materials currently on hand in IAN and CREDICOOP plots provide the opportunity to acquire the necessary information. At present, plans call only for evaluation of the ordinary agronomy measures, primarily yield. The evaluation will have to be enlarged to include the marketing factors mentioned above before a decision on varieties and marketing alternatives can be made.

D. Problems and Recommendations

Comments at this time are limited to those aspects covered in this initial study period. The data will have to be filled out next year. The recommendations can then be amplified and possibly modified. In the meantinme, however, certain actions that require early attention have been identified and are discussed in this section.

1. Maximize returns through a multi-product marketing approach

The project goals envisioned in the plan of work involve the processing and commercialization of extremely large quantities of strawberries in a brief period each year. The annual sales volume from 50 hectares would have a farm value in the neighborhood of Ø120 million, equivalent to almost $1 million, based on the sales data in Annex VIII. Depending on the products marketed, dealer sales to retailers could be as much as Ø500 million, equivalent to about US $4 million. The magnitude of these numbers indicates that there is considerable potential in the strawberry project, but also some very important marketing issues to resolve.

In a market as small as Paraguay, this volume of product, or even one quarter that amount as envisioned in the first-year plan, cannot be absorbed in the fresh-fruit market without the risk of disastrous price effects. Further more, variation in grade and uneven daily supply require alternative marketing

outlets for strawberries. The best market in terms of profitability is in dessert products. But the perishable nature of the berries and variability in daily fresh-fruit supplies and sales make a back-up line essential. The best back-up is likely to be the production of frozen berries, since they require little processing and permit sales at high prices in the 6 of 7 months of the off-season. Frozen berries are usually packed in two forms: consumer pack (¼ or ½ kg, cartons) or pack of 1 gallon or more for industrialization. The former should be processed individual quick freeze and the latter preferably so, but not necessarily, depending on industrial demand. Finally, a sales line for low-quality fruit is required. In Paraguay, such fruit may be salable in the markets to low-income consumers at reduced prices or to flavoring industries like jelly manufacturers.

The necessity of developing a multi-product sales approach indicates that marketing of the CREDICOOP product is going to be a complex operation. Since the sales alternatives are interdependent, the planning should not be done on any single product without planning all the others. This means an "Agroindustry Systems Design" and we recommend that a specialist in this field be obtained from the strawberry industry of Florida or Mexico to prepare such a design. The specialist would start with the varieties and volume of production at the farm level and lay out the entire market plan, including sales volume goals, product pricing policy, equipment specifications, personnel needs, marketing organiza-

tion, and financial needs and projections. The system design will involve investigation of Argentine and Uruguayan sales arrangements to the point of specifying shipment requests, identifying customers and sales procedures including import procedures, and illustrative pricing relative to seasonal supply and demand from other sources. In Asuncion, marketing procedures for all feasible alternatives would be specified and potential clients contacted. The integrated system design job should be scheduled for about January, i.e., the earliest possible date after initial test marketing in the latter part of 1981, so as to leave sufficient lead time for installation of the system to handle the 1982 crop.

2. Test Market the 1981 Crop

It is absolutely essential that the main components of the system be tested before developing it in final form. The 150,000 plants of Campinas 2712 now being reproduced by CREDICOOP farmers will supply fruit to test the marketing this year. We recommend that the opportunity not be lost to test, process and market this crop. The total production will be in the neighborhood of 16,000 kg. Possibly feasible goals for this year are:

6,000 kg consumer-pack fresh

2,000 kg consumer-pack frozen

1,000 kg industrial-pack fresh

2,000 kg industrial-pack frozen

5,000 kg cull (cheap sale and discard)

16,000 kg total

The suggested steps involve:

a. Harvesting in shallow trays and rapid transport on trays to a CREDICOOP packing plant for chilling.

b. Sorting into 4 grades :

(1) Diameter on short axis 2½ cm. (1 inch) or more; no serious defects;

(2) Diameter on short axis 1½ cm to 2½ cm (5/8 to 1 inch); no serious defects;

(3) Diameter on short axis 1 cm to 1½ cm (3/8 to 5/8 inch); no serious defects;

(4) Cull: Small or defective fruit.

c. Consumer pack, fresh, in small ¼ kg trays (plastic or plasticized pressboard, depending on local availability) placed on a shredded polyethylene (viruta pastica) base;

without washing (if possible). Sell directly to supermarkets and to intermediaries in city markets, starting with Market 4. Sell in Grades 1, 2, & 3; possible wholesale prices per tray of ¼ kg are:

Grade 1 - ¢ 150; Grade 2 - ¢125; Grade 3 - ¢100.

d. Consumer pack, frozen, in ½ kg cartons with transparent covers bearing a suitable logo and sealed with scotch tape. Fruit must be destemmed and washed. Quick freeze individually on wire trays in any available freezers immediately. After freezing, pack rapidly into the cartons and return to holding freezer. Sell on direct order to retailers and supermarkets having display freezers. Sell in grades 1, 2 & 3 starting in January. Possible wholesale prices for ½ kg cartons are: Grade 1 - ¢400; Grade 2 - ¢ 340; Grade 3 - ¢ 275. Trucking from the storage freezer to retailers' freezers must be done rapidly so as not to thaw, using cold trucks if possible.

e. Industrial pack, fresh. Sales should be on order to meet client requirements.

f. Industrial pack, frozen. Usual pack is in 1 gallon lined tins. Fruit must be cleaned, destemmed, and washed (including first with a sterilizing solution then with clean water). Individual quick freeze is required for conserve and whole-berry industries; block freeze for

puree-type industries (jams, ice-cream, etc.). Clients must be contacted ahead of time to obtain order specifications, negotiated prices.

g. Cull. Sell loose at Market 4 and to flavoring industries (e.g., lower-quality ice-cream). This product is not washed or destemmed.

The handling of this test marketing will require a special manager and salesman, working closely with CREDICOOP at all stages of harvesting, processing and distribution. Consideration should be given to special incentives for this manager (such as a commission on gross sales), since a dynamic and reliable person is required to assure rapid movement of the product. A rather analytical report will be required on the lessons learned and their application for marketing the 1982 crop.

3. Determine Market Quality of Varieties in IAN Experiments

Agronomic variety trials usually involve only yield comparisons. This will not be sufficient for the strawberries. The trials should be evaluated for the following market factors in addition to those usually taken:

a. Yields by grades and defects. The grading standards should be those adopted for the 1981 test marketing.

b. Fruit shapes and color when ripe, using descriptions in U.S. Department of Agriculture, Farmers Bulletin No. 1043, "Strawberry Varieties in the United States", 1979.

c. Dessert quality (taste, etc. when fresh).

d. Freezing quality. A simple ad-hoc procedure should be sufficient at this stage. Quick freeze 10 clean and destemmed fruits of each plot individually on trays. Pack loosely in closed jars for one week than thaw. When completely unfrozen rate for firmness by selective examination, classifying as follows by percentage:

   a. Firm and whole
   b. Soft and partly disintegrated
   c. Mushy

   A further test would be to put the berries back into the jars and shake moderately until they disintegrate. Count the number of shakes required. (Use a laboratory shaker if available).

e. Transport quality. Put a standardized number of fresh ripe fruits of each variety in a glass jar or a dish of 20 cm and shake as described in the prior test on unfrozen fruit. Count the duration of shakes required to disintegrate the berries at the bottom of the jars. A way of standardizing the shaking (intended to be analo-

gous to vibrations of a truck on the highway) would make the tests more objective.

The price equivalents of the varieties can be judged from the test marketing described earlier. If this does not appear feasible, the varieties should be priced by 3 or 4 people in the trade. Supermarket buyers, such as Sr. Cesar Julian Cano in Super Mercado Villa Morra, should be able and willing to price rate the varieties, since he expressed an interest in fruit quality.

4. Prepare Formal Grades and Standards

Grading should be improved in the light of actual sales experience with the 1981 market test. To help in the preparation of definitive, written grades, we are enclosing at Annex IX the US standards for fresh strawberries and for strawberries going into freezing and manufacturing.

5. Evaluate Marketing Feasibility at the Farm Level by Type-Farm Simulation

Feasibility at the farm level could not be determined realistically because CREDICOOP had not yet selected the target cooperative and farmers for the strawberry program. Once these decisions have been made, type-farm simulation for the currently recommended variety (Campinas 2712) should be performed with the procedure shown in Annexes II and VII for

tomatoes and bananas, respectively. Simulation parameters for strawberries given in Annex VIII were obtained from a grower of the local variety (Margarita); these parameters will have to be modified for the actual yields and prices by grades obtained in the 1981 test marketing. Also, input parameters may have to be modified, as well as the discount for income loss on the replaced crop (i.e., the farm structure modification implies elimination of traditional income from the ¼ hectare planted with strawberries). This simulation should be done in early 1982, assuming selection of the cooperating farmers.

V. PINEAPPLE

A. Survey Procedure

Pineapple marketing was examined in only a cursory manner because a full study of the subject was considered to be premature. Decisions were still pending on the variety to recommend for the program as well as on the target cooperative and specific farmers. However, a few points emerged which can be given attention before the return of the marketing specialist early in 1982, at which time the pineapple marketing study is likely to be more productive and realistic than if it were attempted now.

During the present period, certain aspects of pineapple production were examined at the farm of Peter Willim near Nueva Italia and market information was obtained at Market 4 in Asuncion.

B. Marketing Structure

A brief description of major factors that influence the marketing of pineapple in Paraguay is given in Annex X. Due to lack of objective and reliable statistics, there are major gaps in available knowledge on certain factors in the market, especially seasonal quantities, grade price differentials, and market margins.

C. Conclusions on the Marketing Situation

At this point, only cursory conclusions can be made. More specific information is to be gathered in the second half of this study, programmed in early 1982.

From the view point of CREDICOOP future marketing of pineapple in the Minifundia project, the following conclusions emerged:

1. Fruit quality is generally excellent.

2. There is a well-developed functioning market system in place both for domestic sale and for export.

3. In general, research data are limited, and traditional farming practices persist. However, some of the larger growers are quite knowledgeable of modern technological practices including use of hormones and application of minor elements.

4. In terms of price, the better variety is Smooth Cayenne. It has several other advantages, although its fresh-fruit taste is inferior. A major disadvantage is the limited production of slips, which would require the farmer to buy some of the replacement plants rather than produce all of them on the farm.

5. CREDICOOP should, in principal, have no major difficulty in marketing the production from the Minifundia project; a more specific statement in this respect cannot be made until the cooperatives have been chosen and the situation can be examined realistically.

6. The marketing feasibility at the farm level, derived from type-farm simulation analysis, cannot now be determined, for the same reason.

D. Problems and Recommendations

Since marketing of CREDICOOP's Minifundia project first crop is still at least two years off and the market study has not been made, the recommendations at this point are limited to the gathering of certain information in the 1981 crop year that will be needed for the type-farm simulation analysis.

1. Develop Standardized Grades

Pineapple is marketed under an informal, but well understood, grading system. In order to be able to evaluate farmer production potential in next year's marketing study, written grading standards will be required. Therefore, when the major part of the 1981 crop starts coming on the market, a brief survey of grading should be made at Market 4. The grading factors to be examined are:

a. Varietal differences in standards.

b. Size classes, at the Willim farm, for Abacaxi variety. The standards were approximately as follows:

Class	Kg per fruit
1	1¼ kg or more
2	700 grams to less than 1¼ kg
3	400 to less than 700 grams
4	less than 400 grams

It will have to be determined whether these same size classes, or others, apply to the different price categories in the wholesale market.

c. Price classes for defects.

d. Export and local market differences.

The market observations on price classes and fruit descriptions (in regard to the above characteristics) should be used to prepare written grade descriptions.

The weight classes should be converted to size classes (length and width, not including tops). Attached at Annex XI are U.S. grading standards, which may be of some use as a reference for preparing the CREDICOOP standards.

2. Obtain Yield Data For Next Year's Type-Farm Simulation Analysis

Several farms now producing pineapple should be visited to obtain base-line information on yields using the grading standards described in this report. The suggested procedure is as follows:

a. Make the survey as close to harvest time as possible, but before the crop is harvested. A suitable target date might be October 15.

b. On each farm, select fields that are in their 1st, 2nd, 3rd production years. If the farm has 4th year production, this should also be selected. Select fields

showing production that the farmer considers to be about average. Data are to be taken separately for each year.

c. In each field, select three rows (usually double lines in a row) of 5 meters length each for sampling. The samples should be in average-appearing areas, i.e., basically random.

d. In each sample, count the number of maturing fruits classifying them by the market size classes mentioned above.

e. Convert the data thus obtained to per hectare yields separately for harvest year, grades, and total fruit number and weight.

The producing area at Nueva Italia would be one place to make this survey. The farm of Peter Willem can be used for the Abacaxi variety and the INCA Company plantation for Smooth Cayenne. Probably 2 or 3 farms should be surveyed for each variety if time permits.

The above data will be needed for the 1982 simulation study such as that shown for bananas in Annex VII.

ANNEX I

BACKGROUND ON TOMATO MARKETING

(Annex I was written by Gregory Wyman, Peace Corps Volunteer, asssigned to the Commercialization Department, CREDICOOP)

A. Geographic Origin of the Production

There are 4 major tomato-producing regions in Paraguay: the Departments of Central, Paraguari, Cordillera, and the Alto Parana. In the Alto Parana Department, the main producing area is in the colony Iguazu and in the Central Department, the areas of production are near the cities of Ita, Capiata, and San Lorenzo. Of the four Departments mentioned, Paraguari hosts the most numerous and rapidly expanding areas of tomato production. There were four cooperatives of CREDICOOP plus one colony, La Colmena, which produced tomatoes during the 1980 season. Three of the four cooperatives were participants in the Minifundia Project: Paraguari Ltd., Yaguaron Ltd., and Quiindy Ltd.). Of these, only one, Quiindy Ltd., is participating in the Minifundia Project for the 1981 tomato season and will market its tomatoes through CREDICOOP. However, three of CREDICOOP's other 48 cooperatives are involved this year.

The cooperative Quiindy Ltd. is located in the village of Quiindy at Km. 109 on Ruta I, the only major road going south from the Capital (Asuncion). Forty-eight of its 290 members are producing tomatoes for the Project. Quiindy averages 75 to 80 days of rain per year with an annual rainfall of approximately 1400 mm. (See Annex Maps A0-A5). The city also has an annual relative humidity of 70% and an average annual temperature of 22°C. The three non-participating cooperatives that will also market their tomatoes through CREDICOOP, Ltd. are:

- Acahay Ltd. in Acahay, Paraguari Department;
- Cesar Barrientos Ltd. in the colony La Colmena, Paraguari Department;
- La Rosena Ltd. in Santa Rosa, Misiones Department.

B. Periods of Harvesting and Marketing

The period of maximum tomato supply extends from August to November with an average normal supply from April to August and during November to December, followed by a period of low supply from January to April (see Table 1 of this annex).

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1) This information was obtained in interviews with Mr. Iwao Ishida, President of GMA (Gran Mercado de Asuncion); Mr. Carlos Genitez Figueredo, Administrator of Market No. 4 and 10 fruit retailers located in Market No. 4; numerous wholesalers and retailers of fruits vegetables near Market No. 4 in Asuncion.

Mr. Ishida, who is president of the largest produce wholesale firm in Asuncion, estimated that of the total tomato sales, 75% was of the variety NOYOMI, along with 20% of the total sales being of the variety SANTA CRUZ, and the remaining 5% of the total sales (also SANTA CRUZ) being imports from Brazil. These tomato imports from Brazil arrive in the Asuncion Market during a period of low domestic supply from January to April.

Average weekly price data on domestic tomato sales was obtained from a weekly newsletter published by the Ministry of Agriculture and Livestock (MAG), Informativo Sobre Mercadeo, along with price data for the 3 other crops in the Minifundia Project. The price data, although it is published officially by the Ministry, is very general in nature and is the only weekly published source of market information available specifically dealing with agricultural produce prices (see Table 2 of this annex). These prices pertain solely to the Market No. 4 in Asuncion (see Section C for description of marketing channels of Paraguay) and are usually given in the form of a "price spread" for the product rather than by quality grade classifications. Product grade classifications known by the general public are subjective and the MAG has no set regulations on grading and standardization. The price reporting system of the MAG, although working in theory, in practice does not offer information in the form needed by a business to use as an accurate planning tool of future trends. The most that can be expected to be gained from the price data of the MAG is to arrive at a general seasonality of the crops. The seasonality of the high and low

tomato supplies, indicated in Table 1, supports the information obtained from the wholesalers and retailers in the market.

C. Produce Marketing Channels of Paraguay at the National and International Levels

The produce marketing system in Paraguay revolves around one centralized market in the capital city of Asuncion. This centralized market, known as Market No. 4, is used as a base for all market produce supply and also all price information. Market No. 4 is a regulated zone of about six square city blocks in size which is densely populated by large and small wholesalers and retailers of every type of product imaginable. There is an Administrator of the Market, Mr. Carlos Benitez Figueredo, who is responsible for regulating municipal laws concerning the sales of products in the zone and general practices of the sellers. There are other Market zones similar to Market No. 4 in Asuncion but they have neither the volume of market supply nor the number of wholesalers and retailers that Market No. 4 has. These other Market zones obtain their supplies from Market No. 4.

The marketing channels from the farmer to the consumer vary according to the produce under consideration. Other factors which affect the direction of marketing are the variety and grade of produce. Currently, there are two varieties of tomato being produced and marketed here in Paraguay. These varieties, NOYOMI and SANTA CRUZ, both have different size and quality characteris-

tics along with different prices at each level of marketing. NOYOMI is of exportable quality and holds a market share of 75% of all tomato production while SANTA CRUZ is not considered exportable and holds only 20% of the total production. The marketing systems for both domestic and export sales of tomatoes are described below.

Within the internal tomato market there are 2 market channels: Market No. 4 and other Market zones.

1) Market No. 4

At harvest time, the farmer sells his tomatoes to a "acopiador," at a price of ₲20 per kilo for SANTA CRUZ and ₲40/kilo for NOYOMI. The "acopiador," rents the tomato crates with a capacity of 18-20 kilos each from the retailer and pays a deposit on each crate. The "acopiador" hires local laborers to pack the tomatoes, which are than transported to Market No. 4 in Asuncion. There he sells the tomatoes to the retailer at ₲30/kilo for SANTA CRUZ and ₲60/kilo for NOYOMI. The retailer will size classify the tomatoes and sell them as follows:

PRICE TO THE CONSUMER

SIZE	SANTA CRUZ	NOYOMI
Regular	₲40/kilo	₲80/kilo
Large	₲50/kilo	₲100/kilo

2. Other Market Zones

When sold in markets other than No. 4, two new links are added to the marketing chain. Here, the farmer sells his tomatoes (Noyomi) to the "acopiador" at ₲40/kilo but this time the "acopiador" sells the tomatoes to a wholesaler in Market No. 4 for ₲60/kilo. The wholesaler sells the tomatoes to a middle-man in the other Market zone at ₲65/kilo who, in turn, sells them to a retailer at ₲80-85/kilo. The retailer will size classify the tomatoes and sell them at ₲120/kilo for the regular size and at ₲140/kilo for the larger size.

3. Export Marketing

Only the NOYOMI variety is exported to Buenos Aires. The farmer sells directly to the wholesaler/exporter at a price of ₲70-80/kilo in 18-20 kilo-capacity crates, which the exporter transports by truck directly to Buenos Aires. Once in Buenos Aires, the exporter sells the tomatoes in the wholesale auction market for an average of about ₲180/kilo.

It appears that in regards to tomato processing, there is no forward contracting from the farmer to the processor. Information obtained by Fretes Ventre and Associates confirms this as follows:[1)]

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1) "Basic Studies For A Pilot Project of Crop Intensification in the Minifundia Area of the Central Zone of Paraguay," (January 1979), prepared by Fretes Ventre and Ass. for USAID.

"...food products processed in Paraguay have much difficulty penetrating the international markets. Tomato products are not exempt from this difficulty."

"...there is no doubt that the industrialization of these products in Paraguay is going to have many obstacles."

"In the first place, there are no bases quantitatively important enough to think of an international market from an industrial point of view. The national consumption of derived tomato products is variable and small. Besides, the fresh product is much cheaper. Great difficulties exist in avoiding illegal trade from neighboring countries who have been strong producers for a long time, of both the fresh and processed product."

"...Secondly, there is a substantial negative effect in the cost of production due to the cost of containers. Up to the present moment (January 1979) all of the traditional materials that have been used in the country as containers for each of the individual products, including cans, bottles, jars, etc., have increased the costs of of the final product by 30-40%. This situation is disadvantageous for competing with similar imported products."

"Therefore, in our opinion, we should discard, at least in the short run, the traditional processes of industrialization tomato in the country (e.g. canned tomatoes, canned juices, etc.)."

D. CREDICOOP Marketing Channels and Market Destinations under Consideration

The cooperative will provide tomato crates to farmers and the transportation for the tomatoes from the farm to a Central Warehouse on the outskirts of Asuncion. CREDICOOP owns the crates, and will distribute them to the coops weekly as they become empty and the coops will then redistribute them to the farmers in accordance with the size of their crop; each crate has a capacity of 18-20 kilos, has an average life of 2 years, and costs around ₲240. The coop truck will travel a planned route to a number of farmers, usually about 10 times during the harvest When the truck arrives at each farmer's field, the driver will pick up the crates of harvested tomatoes and deliver them to the new Central Warehouse of CREDICOOP. The Warehouse, which has approximately 1000 square meters of space, will house refrigeration units large enough to store all of CREDICOOP's future planned produce production safely. In addition adequate space will be available for receiving and packing the produce for marketing. Before the tomatoes leave the farm, a CREDICOOP agent will pre-classify them by size and color. The boxes will be weighed and labels attached to the box with the farmer's name, account number of his account in the coop, along with the local coop's name. The CREDICOOP agent will review and adjust the farmer's classifications and inspect for general sanitary conditions. Once the coop truck arrives at the Warehouse, a foreman will verify the classifications, weigh the produce and issue receipts accordingly.

A staff of approximately 200 women will be on hand to cull the unsalable tomatoes and separate those which are exportable from those to be sold domestically. The tomatoes are wiped clean with cotton rags and packed in 25 kilo-capacity crates if they are exportable or in 18-20 kilo crates if they are to be sold locally. An inspector from the Vegetable Sanitation Division of MAG must also inspect the tomatoes for exportation to certify their quality.

The crates used for tomato exportation are new and used only once. These crates are not as sturdy as those used for harvesting, since they are not reusable, and cost about ₲150 each. Both types are specially made for CREDICOOP and have rounded edges to prevent cutting the tomato surfaces. The export crates have a label affixed to one end as shown in Figure 1 of this annex. Wooden covers are nailed on the crates which are then bound with plastic straps for greater security.

The primary market being considered by CREDICOOP is the wholesale auction market in Buenos Aires. The Market, "Mercado de Remates Saldias," is open Tuesday, Thursday, and Saturday during the morning hours only. CREDICOOP deals with an auction representative, Mr. Miguel Grines of Ekwan S.A., who has an office in the Market. CREDICOOP sends the tomatoes via a trucking firm, Fenner-Huttinger Cia., to Buenos Aires at a flat rate of ₲350/crate. CREDICOOP uses two customs clearance agencies to certify the origins of the product. Agencia Figueira of Asuncion certifies that the product is leaving Paraguay, and as it crosses the border

into Argentina the agency of Jose L. Mosquera certifies that the Paraguayan product is entering Argentina. When the truck load of Paraguayan tomatoes enters Buenos Aires, it is sold by Ekwan S.A. in the auction wholesale market. The sales money is deposited by a bank which has branches in both countries. Upon the sale of the tenth truckload of tomatoes in the auction market, the money is transferred to CREDICOOP's account in the Asuncion branch of the bank.

The sales receipt from the auction is sent by mail from Ekwan to CREDICOOP indicating the amounts in Argentine pesos. When the actual money is transferred via the bank, U.S. dollars are used. When CREDICOOP receives the sales receipt, it presents the receipt to the Central Bank of Paraguay and pays $.35/kilo for all produce sold in Buenos Aires. Paraguay has an official exchange rate of ₲126 = $1.00, but this fee of $.35 serves as an exchange adjustment to bring the official rate up to the market rate.

Regarding domestic tomato marketing channels of CREDICOOP, the plans have already been completed and await implementation. A new centralized wholesale market, the Market of Supplies, is under construction at the moment and shall be completed by August. This new market is intended for use by large wholesalers who currently use Market No. 4. Its large facilities and offices will provide easy access to merchants. CREDICOOP is renting store space to sell its own local produce via GMA (el Gran Mercado de Asuncion)

if the new market is not completed in time. Some positive aspects of the new Market are the following:

- A system of produce standardization will be possible through adoption of specific grade classifications which are already used informally but have never been recognized officially. These classifications will be enforced by trained inspectors from the MAG.

- A system of price reporting of products at the wholesale level will be implemented by the MAG and the wholesalers themselves to bring more accurate market information into the hands of everyone for better advance decision making.

The money CREDICOOP receives from both local and export tomato sales is deposited in a bank account until the end of the marketing season. At that time, CREDICOOP will liquidate the account for distribution to the cooperatives.

Farmers must await the end of the commercialization period to receive payment for the sale of tomatoes. This delay is significant since farmers generally have outstanding production loans to repay. They receive a production loan from the cooperative at 12% interest, 3% commission charge, 3% monetary readjustment charge (all three of these are calculated on annual rates), and 1% administrative costs. Paraguayan law (Law No. 349) states specifically that cooperatives or National Federations of Cooper-

atives (CREDICOOP Ltd.) are not allowed to charge "more than 12% interest annually." But, the law permits the use of a special monetary readjustment charge which acts as an annual interest rate and varies with the needs of the coop or CREDICOOP, allowing them to take advantage of interest rate fluctuations like banks and savings and loan associations. Because the farmer does not receive his money from the sale of his tomatoes until the end of the tomato marketing period, which is usually 2 to 3 months, the farmer is eligible to take out a short-term loan for this period (at the rates previously mentioned) as an advance payment up to as much as 30% of the estimated value of his production. CREDICOOP makes the same arrangements with its cooperatives but at lower interest rates (11% interest with 1% commission and 3% monetary readjustment charges). At the end of the marketing period, CREDICOOP distributes the gross profits to the cooperatives minus the advance payment money they were loaned and minus a 7% marketing service charge. The cooperatives are allowed to distribute the money in whatever manner they agree upon with their members, minus a fee for transporting the tomatoes from the farm to the Central Warehouse. Usually the cooperative applies the money to the loans the farmers received and distributes the remainder to the farmers in accordance with the production they marketed through CREDICOOP.

E. Supply: CREDICOOP Estimated Production for 1981

CREDICOOP has set the following goals for its 1981 tomato crop:

Estimates	Metric Tons	%
Total Production (gross)	500	100
Production Shrinkage*	-25	- 5
Total Production (net)	475	95
Exportation	-375	-75
Domestic Sales	100	20

* due to poor product quality, excessive handling, etc.

The gross production is expected to have the following distribution by cooperative:

Cooperative	Metric Tons	%
Quiindy Ltd. (Minifundia Project)	400	80
Acahay Ltd.	30	6
C.B. Ltd.	40	8
La Rosena Ltd.	30	6
	500	100

The estimated 1981 tomato exportation by CREDICOOP is not expected to alter national exportation totals significantly. Due to the complete lack of national production data by the MAG, it is

difficult even to calculate domestic consumption. The official exportation statistics are given in Table 1A for years 1975 to 1980. However, one must take into account the large percentage of contraband which is not reflected in official figures. Reliable sources estimate between 50%-90% of all products bought and sold in Paraguay are contraband. But by using the official statistics, the 1980 tomato exports to Buenos Aires by CREDICOOP of 215 metric tons is only 1.3% of the 16,000 metric tons officially recorded as exported. Even if national exports stabilized at the 16,000 metric ton level, CREDICOOP's 1981 estimated exportation of 375 metric tons would increase its export market share only 2.3%. Total tomato exports by Paraguay over the past six years are as follows:

Year	Kilos
1975	1,364,950
1976	2,843,543
1977	1,828,230
1978	2,187,469
1979	3,276,850
1980	16,239,316

Source: Commercialization Department, MAG, Asuncion, Paraguay.

F. Tomato Classifications By Quality Grades

Through interviews with fruit wholesalers and retailers that were previously mentioned, it was possible to examine the fruits and measure them for differences in sizes and shapes. For the two tomato varieties being marketed, NOYOMI and GIANT SANTA CRUZ, the following data were recorded:

Diameters

Size Classes	Noyomi	Giant Santa Cruz
Cero	At least 6 cm to 7 or 8 cm.	At least 4 cm to 5 cm.
Primera	7 or 8 cm. to 10 cm	5 cm. to 6 or 7 cm.
Extra	10 cm. plus	6 or 7 cm. plus

Color Classes (both varieties)

Green	Has no more than about 10% pink or red surface area (U.S. Grade equivalents are Green and Breakers); exportable.
Painted	Has from 10% to 50% pink or red surface area (U.S. Grade equivalents are Turning and Pink); exportable.
Colored	Has 50% or more pink or red surface area (U.S. Grade equivalents are Light Red and Red); not exported.

Classification of Defects

Floron	They are misshapen, irregular locules. Minor and infrequent irregularities are permitted. Otherwise the misshapen tomatoes are culled. The extent of culling depends on market demand. "Floron" tomatoes are classified by size (0, 00, and 000) corresponding to the 3 size classes above (Cero, Primera, and Extra).

As mentioned previously, these grades and size classes are informally used in the markets at the moment. Also, with the completed construction of the new Market of Supplies will come new opportunities to initiate and support an official system of standards and grading, based on the present system in the market, and an accurate price reporting system linked to the standards and grades.

H. The 1980 Commercialization by CREDICOOP: A Review

The 1980 Tomato season was one of fulfilled expectations and also a few disappointments, which came from learning the entire process of producing and marketing a new product by on-the-job training. It was the first attempt by CREDICOOP tc market a perishable product for exportation and the results reflected the hard work and

diligence of those involved in the Project from the initial planning stages until the time the farmer received his payment.

CREDICOOP received technical assistance for production from USAID and from two branches of the Department of the Minister of Agriculture: the National Institute of Agriculture (IAN) and the Extension Service for Agriculture and Cattle (SEAG). The Head of the Technical Assistance Department of CREDICOOP, Ing. Agr. Carlos Villalba, and the Coordinator SEAG/CREDICOOP, Ing. Agr. Jose Bareiro, taught education courses to the tomato farmers in which they tried to blend the traditional practices with the more modern practices of farming. Much time was used in introducing the new practices and the reasoning behind them such as soil preparation; the use of fertilizers, fungicides, and insecticides; and irrigation practices. The coordinators encountered some resistance to the new ideas from the more traditional farmers, who continued to use their traditional farming methods. Needless to say, their crop yields were not as high as other farmers'. Ing. Agr. Gerardo Lopez from IAN tested the 2 varieties used ("Platense" and "Santa Cruz") along with other varieties in test plots at the Institute. He worked closely with Linda Lucasey, a plant pathologist from the Peace Corps who was researching tomatoes at IAN, with the test trials and they discovered, as did the CREDICOOP farmers, that the variety "Plantense" had size and shape defects. The varieties "Santa Cruz" and "Noyomi" had the best yields and uniformity, the researchers concluded.

There were numerous meetings between the members of the 4 cooperatives and Mr. Jorge Talavera, the head of the Commercialization Department of CREDICOOP, so that everyone involved would know the tomato size and color classifactions to be used and the distribution system of the tomato crates. Farmers were informed that they would be paid an average rate per kilo for the export type and an average rate per kilo for local sales. (In 1980, there were 3 coops in the Tomato Project: Paraguari Ltd., Yaguaron Ltd. and Quiindy Ltd.; C.N. ltd. also produced tomatoes in 1980 and marketed them through CREDICOOP.)

Mr. Talavera directed the tomato marketing for exportation as well as for local sales. After a fact-finding trip to Buenos Aires to collect information on the marketing channels and requirements of the wholesale auction market and also on the size and grade classes of tomatoes sold there, he began to set-up the infra-structure within the commercialization Department to receive and market the tomatoes. A warehouse was chosen for the receipt of the product and a foreman along with 150 workers were hired to receive, clean, classify, and package the product. The staff of 150 workers, mostly women, were paid a basic hourly wage of ₲110 and were trained in the areas previously mentioned. Tomato size and color grades were set but the former had to be expanded due to the non-uniformity of the "Platense" variety tomatoes received during the harvest. There were also the following problems at harvest-time:

a) harvesting of over-ripe and under-ripe tomatoes;

b) harvesting of very small and very large size tomatoes;

c) tomatoes infested with worms;

d) tomatoes with Bacteriosis symptoms;

e) high temperatures during harvest-months (30°);

f) incorrect fruit handling;

g) slow sales in market at moment of product ripeness.

Due to these problems, wasted produce amounted to 42% of the total production for the Project. Table 3 of this annex shows the data for the farmer-to-coop level for the 3 coops in the Project, comparing actual data at the farm level to projections made before the 1980 tomato season. Not reflected in the data in Table 4 of this annex are all costs and benefits at the CREDICOOP level but this is because they are not passed down to the cooperatives. these costs were absorbed by CREDICOOP which receives its funding for the Minifundia Project from USAID and this funding is crop-specific for each of the 4 crops in the Project.[1)]

As an overview of the success of the 1980 tomato exportation to Buenos Aires, it helps one better to imagine what took place by using graphical illustrations. Annex A11 displays the average wholesale market price of the tomato in Buenos Aires (deflated to

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1) A memorandum written by Mr. Talavera to the Manager of CREDICOOP, Mr. Juan Peralta Paredes, which accounts for the flow of funds between CREDICOOP and its coops, is attached as Annex A10.

dollars, then changed into guaranies) for the years 1978-1980, this information was obtained from the U.S. Embassy in Buenos Aires. As one can see from the graph, the price skyrocketed during the month of September. This was caused by the lack of domestic Argentine tomatoes which, because of climatic differences, are not harvested before October.

In Table 4 the price and quantity relationship of CREDICOOP's exported tomatoes are shown. Again, the prices were originally quoted in Argentine pesos, paid in U.S. dollars and changed into Paraguayan guaranies. CREDICOOP's production was exported from the middle of August through the first week of November, with the majority being exported from late September to late October.

I. Recommendations and proposals for application during the 1981 Tomato marketing season

1. The tomato grading classes used last year should be reinforced more at the farm level to provide incentive for more careful culling at the farm level before they reach the Warehouse.

2. Tomato classifiers should check the farmers' own classifications before the crates leave the farm and should adjust the tomatoes in cases where it is clear that there needs to be more uniformity of size or color.

3. Of the 7 problems listed in Section H that occurred during the harvest last year, 2 were problems of incorrect culling, 2 were problems of production, one was due to high temperatures, one was due to incorrect fruit handling, and one was due to low market demand at critical stages in the product life.

- The incorrect culling can be corrected at the farm level using (1) and (2) above.

- The production problems can be corrected at this stage in the production before the harvest. CREDICOOP has received recent recommendations from USAID on which pesticides are advisable for use against the problems.

- The problem of high temperatures cannot be avoided in the present system set-up. The tomatoes which are exported arrive in Buenos Aires via an open bed truck with 500-1000 crates covered by a tarp. Unless insulated trucks or refrigerated trucks are used, transportation at any level will remain via open bed trucks.

- The problem of incorrect fruit handling can be approached by better training of the staff in the Central Warehouse. This would improve their effectiveness on the job and reduce excessive culls due to this problem.

- The problem of low market demand at the mature ripeness stage cannot be remedied but discounts could be used to move them faster as they approach this stage.

4. New destinations to consider could also include other cities such as Mendoza, Rosario, Santa Fe of Argentina, and Montevideo, Uruguay. As Paraguay does not have information on these markets, research would have to be conducted for product requirements and market demand.

5. As the Buenos Aires market accepts the growing supply of CREDICOOP products, buyers can be invited to come to Asuncion and bid on lots of tomatoes here for delivery to Buenos Aires. But this will come in future years as confidence grows in the consistent product quality that CREDICOOP can send to Buenos Aires.

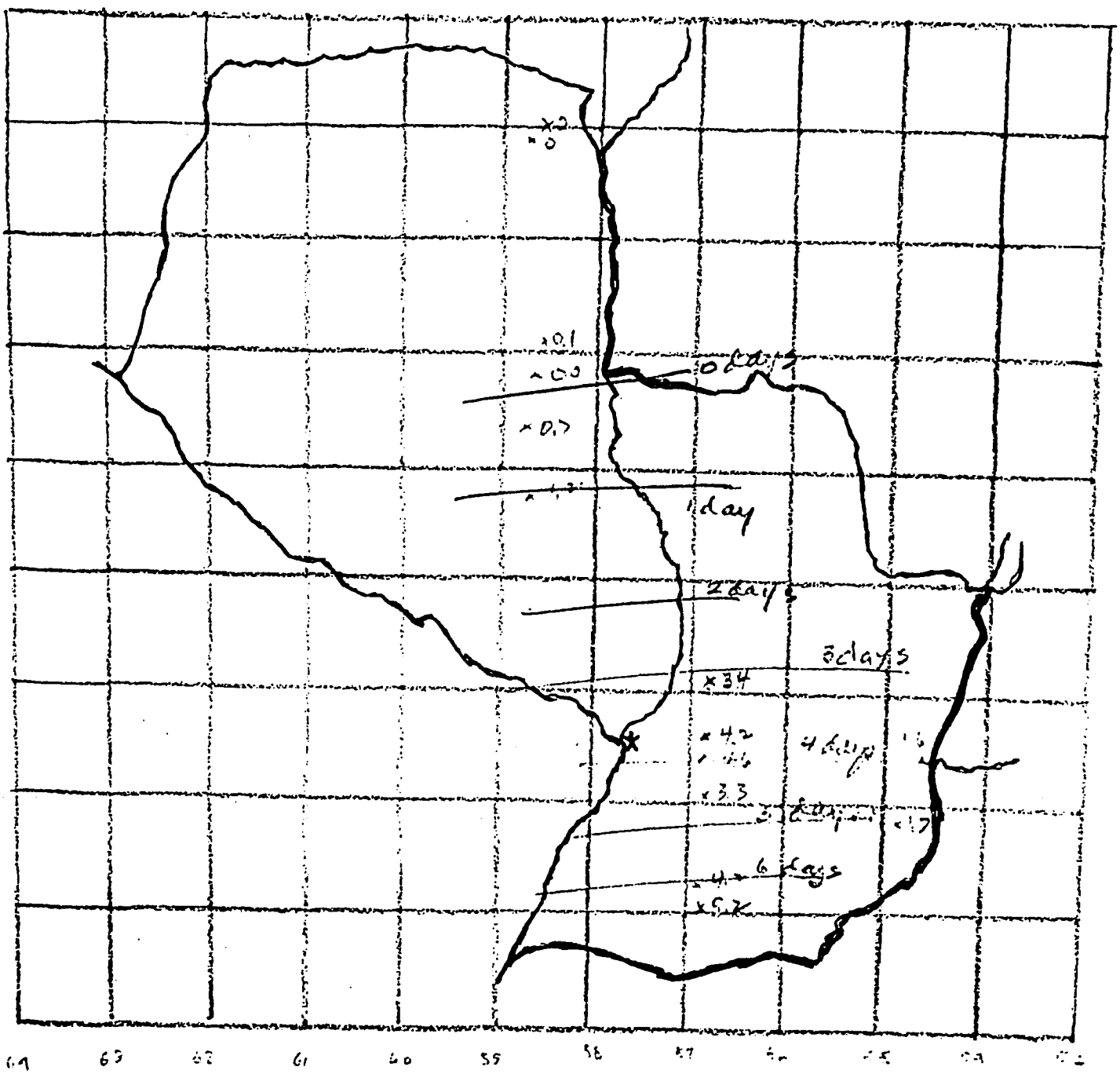
6. With the completion of the planned refrigeration units in the Central Warehouse, palletization could become necessary. This would not be a current problem, though, as labor is relatively cheap here at the moment. But in future harvest, which will in all likelihood grow annually, the labor costs might become prohibitive and force this alternative on the managment of CREDICOOP. Warehouse space is ample for this alternative also.

7. There are possibilities in packaging tomatoes for the ultimate consumers also. Supermarkets here are set up to sell tomatoes in this form and it would add extra value to the tomatoes.

ANNEX I - Map 1

Average No. of Frost Days

Source: Ministerio de Defensa Nacional
Servicio Nacional de Meteorologia e Hidrologia
Departamento de Climatologia (1961-1970)



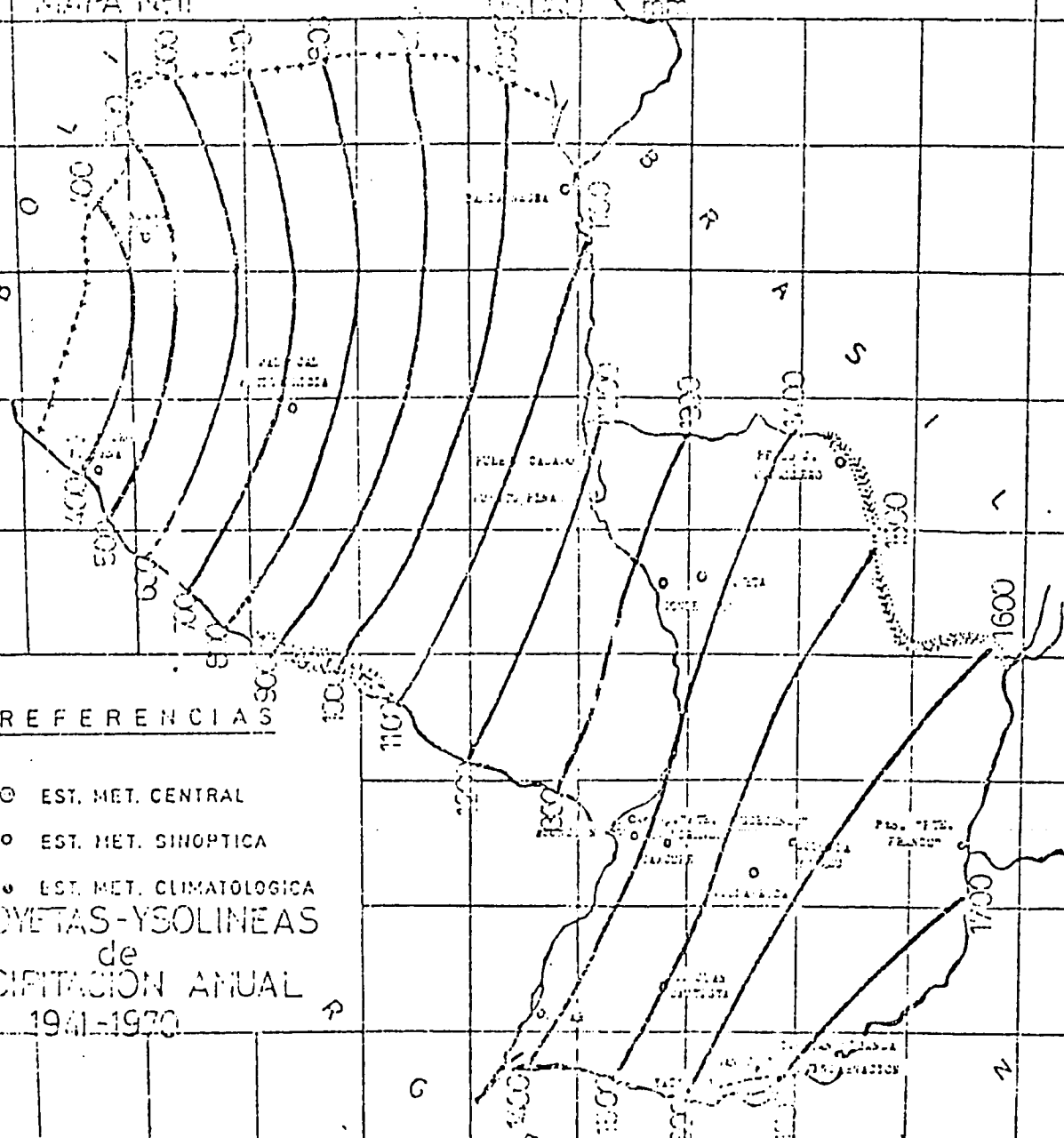
REPUBLICA DEL PARAGUAY

MINISTERIO DE DEFENSA NACIONAL

DIRECCION DE METEOROLOGIA

PRECIPITACION MEDIA ANUAL

MAPA N-11



REFERENCIAS

- ⊙ EST. MET. CENTRAL
- o EST. MET. SINOPTICA
- • EST. MET. CLIMATOLOGICA

YSOYETAS-YSOLINEAS de PRECIPITACION ANUAL 1941-1970

ANNEX I - Map 3

BEST AVAILABLE DOCUMENT

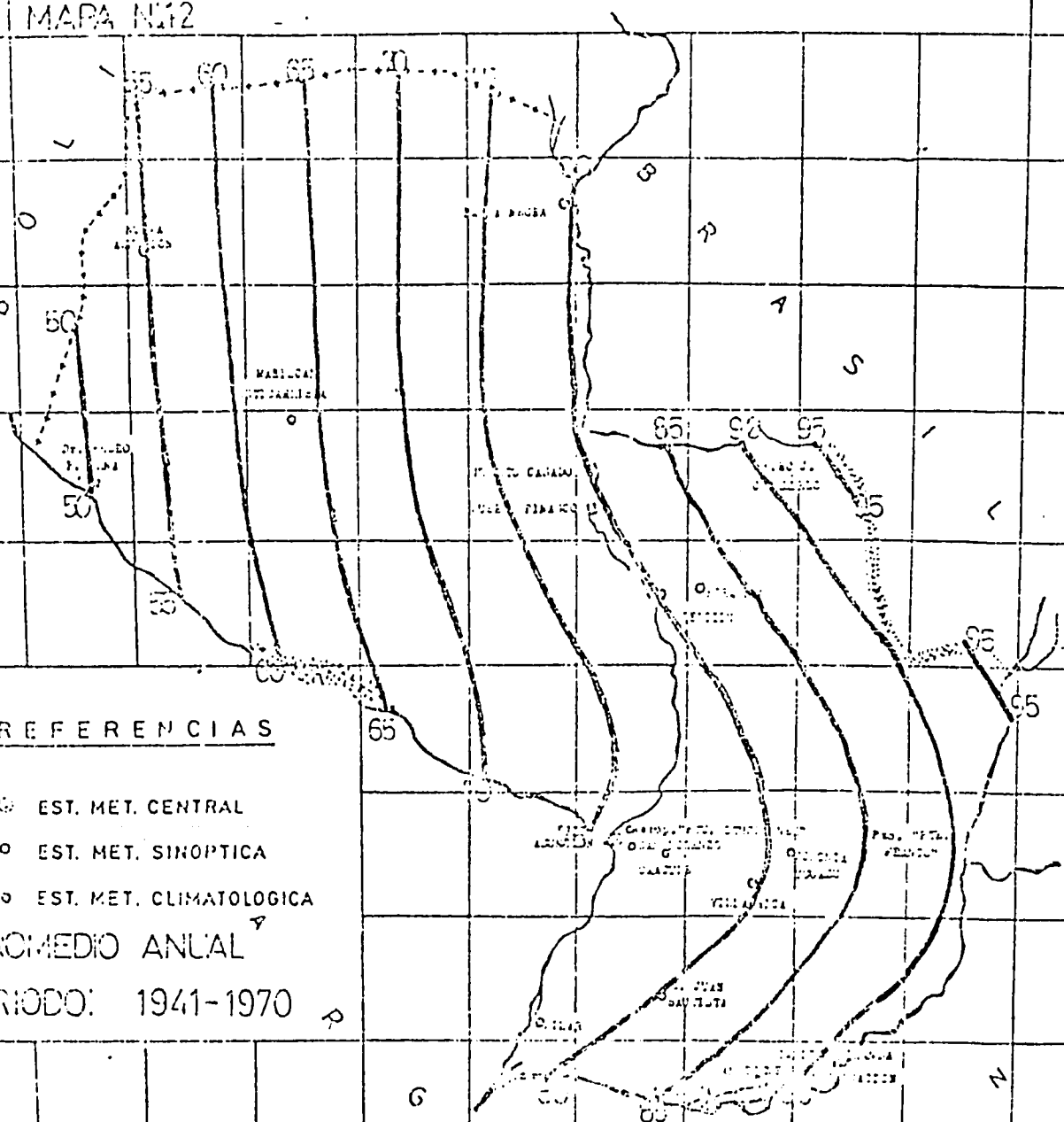
REPUBLICA DEL PARAGUAY

MINISTERIO DE DEFENSA NACIONAL

DIRECCION DE METEOROLOGIA

A DIAS de PRECIPITACION

MAPA N°12



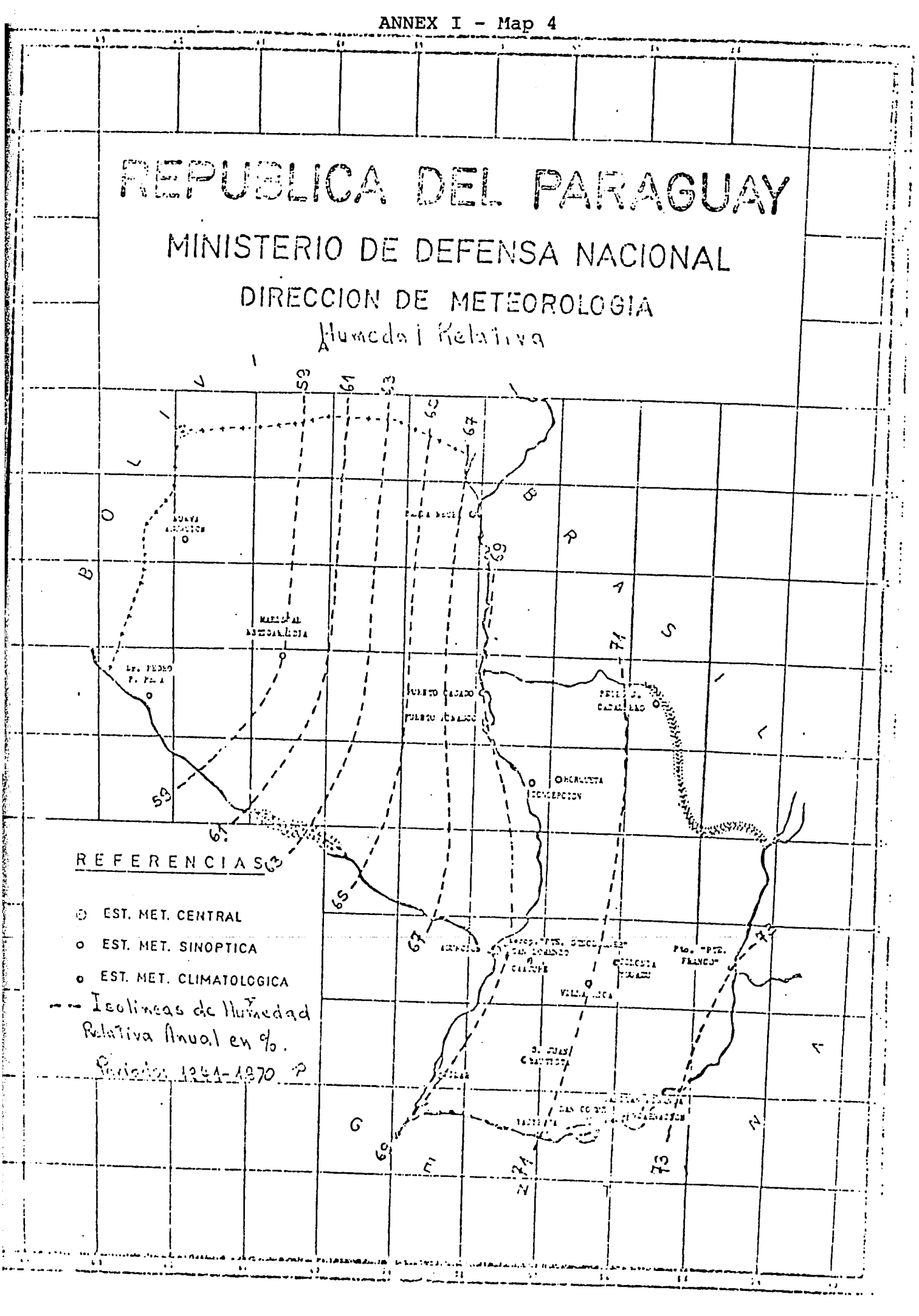
ANNEX I - Map 4

REPUBLICA DEL PARAGUAY

MINISTERIO DE DEFENSA NACIONAL

DIRECCION DE METEOROLOGIA

Humedad Relativa



ANNEX I - Map 5

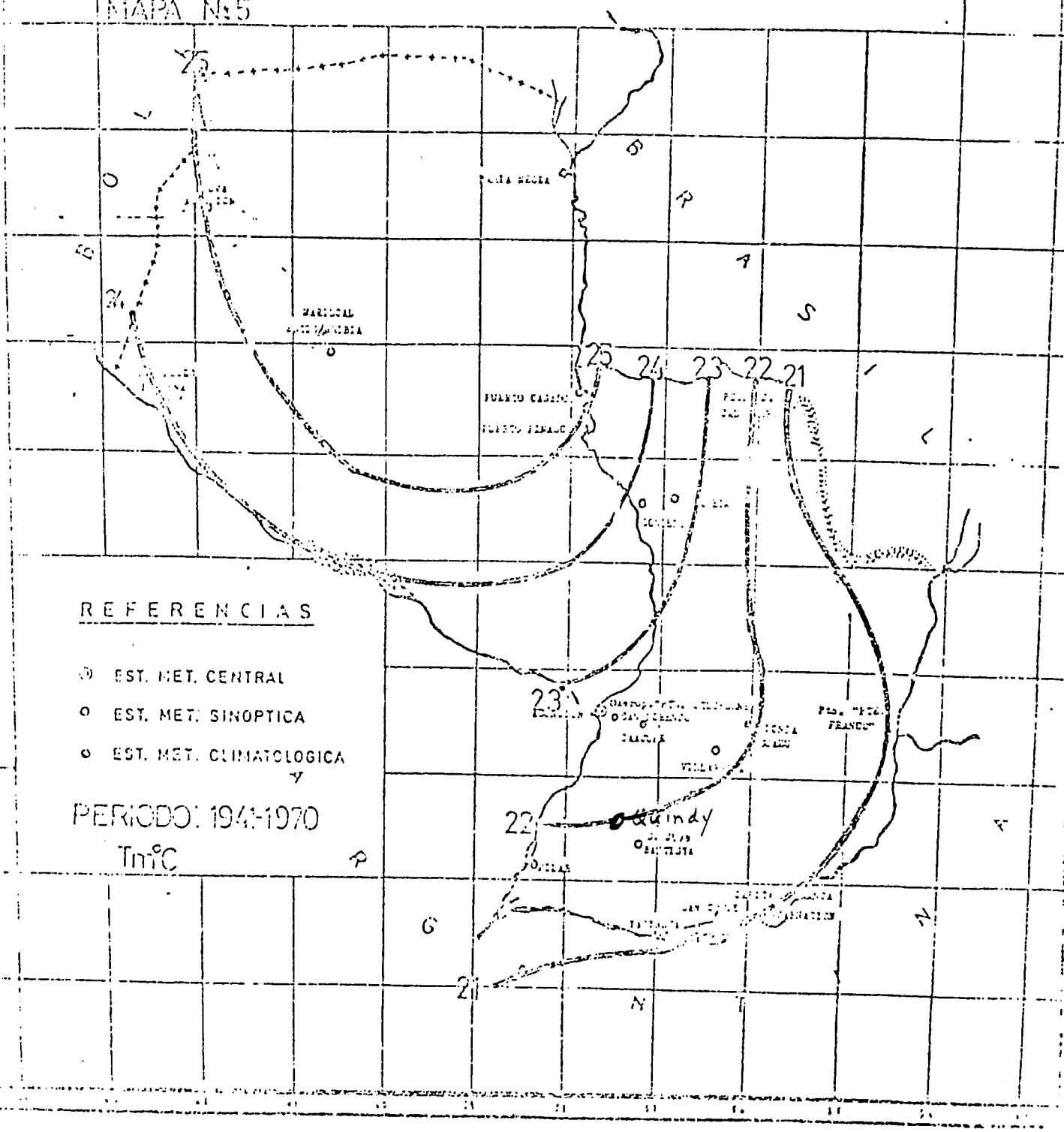
REPUBLICA DEL PARAGUAY

MINISTERIO DE DEFENSA NACIONAL

DIRECCION DE METEOROLOGIA

ATEMPERATURA MEDIA

MAPA N:5



ANNEX 1 - TABLE 1

JCTO	VARIEDAD	% DEL MERCADO	ORIGIN	MES I	II	III	IV	V	VI	VII	VIII	IX	X	XI	XII
TE	NAGAMI	75	-CENTRAL -COLONY IGUAZU												
	SANTA CRUZ	20	-CENTRAL -COLONY IGUAZU -COLONY LA COLMENA												
NA	SANTA CRUZ CARAPE	5 70	-BRASIL -CENTRAL -CONCEPCION -SAN ESTAN- ISLAO												
	CRC	30	-CENTRAL -CONCEPCION -SAN ESTAN- ISLAO												
ILLA	CARAPE CRIOLLA	60	-BRASIL -AREGUA -NEMBY												
	BRASIL	40	-BRASIL												
	CRIOLLA	20	-CENTRAL -CONCEPCION												
	CAYENNE LISA	20	-CENTRAL												

GRADO DE ABASTECIMIENTO ---------- POCO ---------- MEDIO ---------- MAXIMO

FUENTE : SR. IWAO ISHIDA, PRESIDENTE DEL GRAN MERCADO DE ASUNCION
SR. CARLOS BENITEZ FIGUEREDO, ADMINISTRADOR DEL MERCADO Nº 4
Y 10 COMERCIANTES DEL MARCADO MISMO
MUCHOS MAYORISTAS Y MINORISTAS DE FRUTAS

COTIZACION DE LOS PRODUCTOS AGRICOLAS EN EL MERCADO LOCAL A NIVEL DE MAYORISTAS, EXPORTADORES E INDUSTRIALES.

Elaborado por el Departamento de Difusión y Asistencia Técnica al Mercadeo. D.C.E.A.-M.A.G. Junio/1981

PRODUCTOS	₲s/Kg. Precios.		Promedio	Lugar de	OBSERVACIONES.
	4.VI.81	28.V.81	Junio/80	entrega	
Algodón	55-58	55-57	62	Asunción	₲s/Kilo. Las desmotadoras siguen recibiendo este textil, informaron industriales de la zona central.
Tabaco (Negro)	35/75/95	35/75/95	35/55/75	Asunción	₲s/Kilo. Pagado por los tipos cachicai, pasado y flojo.
CEREALES					
Maíz (Venezolano)	16	16	11	Asunción	₲s/Kilo. En esta semana ingresó en gran cantidad, inf.may.
Maíz (Tupi-locro)	23	23	14-16	Asunción	₲s/Kilo. Poca actividad en este rubro agrícola.
Maíz (Chipá)	25	28-30	16-17.50	Asunción	₲s/Kilo. Disminuyó el precio en los últimos dias, inf.may
Arroz (Elaborado)	35-70	35/70	35/70	Asunción	₲s/Kilo. De producción nacional.
Arroz (Elaborado)	60-74	38-72	...	Asunción	₲s/Kilo. De procedencia extranjera.
OLEAGINOSAS					
Tartago (Exp.)	40	40	35	Asunción	₲s/Kilo. Pagado por productos puesto en dep. de aqui y Concepción.-
Soja (Exp.)	25-26	...	17-19	Asunción	₲s/Kilo. Pagado en Ciudad Pte. Stroessner.
Soja (Ind.)	26-28.70	26-27	19-20	Z.Central	₲s/Kilo. Puesto en Encarnación y zona central del país.
Coco (Carozo)	220-240	220-240	252.50	Z.Central	₲s/El cajón de 60-65 kilos. Puesto en dep. de firmas indust.
ACEITE ESENCIAL					
Petit Grain	1.750	....	1219	Asunción	₲s/Kilo. Pagado por firmas exportadoras de la zona central.
BULBOS Y TUBERCULOS					
Cebolla (Ext.)	70	50	41-43	Asunción	₲s/Kilo. Durante la presente semana, se incrementó el precio.
Papa (Ext.)	18-20	22	40-42	Asunción	₲s/Kilo. Mantiene sin variación su cotización diaria.
Mandioca	7	6	7.62	Asunción	₲s/Kilo. Hoy ingresó mucho como todos los dias anteriores.
FRUTAS Y HORTALIZAS					
Banana (Oro)	25-30	25-30	21-26	Asunción	₲s/Kilo. Se ofertan muchas partidas, pero la venta es poca.
Banana (Carapé)	12-15	12-15	16-21	Asunción	₲s/Kilo. Pagado por productos en estado verde.
Tomate (Caj.17/18 K)	900-1300	...	575-2025	Asunción	Hoy ingresó alrededor de 600 cajones.
Pimiento (Caj.7/8 K)	800	...	500-883	Asunción	La oferta de la fecha fue muy limitada, aseguraron dist.
OTROS					
Huevos	90-120	50-120	77-110	Asunción	₲s/La doc. Pagado según el tipo y calidad del producto.
Fariña	30	30	36-39	Asunción	₲s/Kilo. La actividad es escaza.
Poroto	70	70	43-51	Asunción	₲s/Kilo. Este es el precio base para la comercialización.
Almidón	40	...	53-61	Asunción	₲s/Kilo.
Queso	350-380	...	247.50	Asunción	₲s/Kilo. De prod. nacional y proc. extranjera.

FUENTE : INFORMATIVO SOBRE MERCADEO, Nº305 , D.C.E.A.-M.A.G. (5 de Junio, 1981)

CREDITOS COOPERATIVOS		Total Cultivación (HA)	Precios	X HA p/Precio	Total Plantas Cultivadas	X Plantas p/HA	Total Producción en Kilos	Total Producción Entregada (Kilos)	X Producción en Kilos p/Precio	X Producción en Kilos p/HA	X Producción en Kilos p/Planta
Paraguarí Ltd.	Proyectado	10	20	0,5	250.000	25.000	400.000		20.000	40.000	1,6
"	Realizado	8	26	,31	164.000		98.985	71.034	7.607	12.373	,59
"	% Realizado	80	130	62	67		25		19	31	37
Itaguarón Ltd	Proyectado	4,5	15	0,3	187.500		300.000		20.000	40.000	1,6
"	Realizado	18	15	,32	101.000		111.381	94.333	7.106	21.705	1,11
"	% Realizado	64	100	64	55		10		40	62	71
Quindy Ltd.	Proyectado	7,5	15	0,5	187.500		300.000		20.000	40.000	1,6
"	Realizado	5,25	17	,31	119.000		196.591	158.131	11.682	37.446	1,65
"	% Realizado	70	113	62	63		66		58	94	10,5
Total	Proyectado	25	50	0,5	625.000		1.000.000		20.000	40.000	1,6
Total	Realizado	18,05	58	,31	390.000		414.163	331.524	7.759	24.841	1,12
Total	% Realizado	72	116	62	62		41		39	62	70

		"INGRESOS" Total Venta de Tabaco (G.)	X Recio p/Kilo Exportación (G.)	X Precio p/Kilo Local (G.)	X Precio p/Kilo Realidad de CREDICOOP	"EGRESOS" Total Costos de Comercialización (G.)	Total Costos de Producción (G.)	Total Costos de Terminado (G.)
Paraguarí Ltd	Proyectado	16.360.000			40,76		7.244.380	
"	Realizado	11.691.472	30,00	30,00	60,00	377.178	5.347.506	5.725.283
"	% Realizado	71			147		74	
Itaguarón Ltd	Proyectado	12.224.000			40,76		5.433.289	
"	Realizado	5.126.910	30,00	30,00	60,00	196.728	3.354.120	3.910.848
"	% Realizado	42			147		62	
Quindy Ltd.	Proyectado	12.276.000			40,76		5.433.289	
"	Realizado	8.057.980	30,00	30,00	45,85	579.163	4.182.821	4.761.984
"	% Realizado	66			113		77	
Total	Proyectado	40.760.000			40,76		18.111.950	
Total	Realizado	21.876.362	30,00	30,00	55,28	1.543.669	12.833.446	14.127.115
Total	% Realizado	54			136		71	

(CONTINUED ON NEXT PAGE)

CULTIVOS		Total ($) Costo de Producción	X Costo de Prod. p/Kilo	X Costo de Prod. p/HA	Merma entre Entregado y Venta (Kilos)	Total Exportación (Kilos)	Total Venta Local (Kilos)	X Exportación Kilos p/Precio	X Exportación en Kilos p/HA	X Exportación en Kilos p/Planta	% de Total Producción Vendida
Paraguarí Ltd.	Proyectado	7.444.320	18,11	721,43		200.000		10.000	20.000	,80	
"	Realizado	5.744.525	31,02	608,43	21.696	41.162	16.176	1.583	5.145	,125	58
"	% Realizado	77	95,8	92		21		16	26	31	
Yaguarón Ltd.	Proyectado	5.433.285	18,11	721,43		150.000		10.000	20.000	,80	
"	Realizado	3.554.120	28,38	562,75	22.310	51.056	13.093	3.404	10.637	,119	55
"	% Realizado	62	156	96		34		34	53	61	
Quindy Ltd.	Proyectado	5.433.285	18,11	721,43		150.000		10.000	20.000	,80	
"	Realizado	1.181.881	21,27	406,57	36.617	111.314	8.200	6.518	21.203	,94	61
"	% Realizado	17	117	110		71		65	106	118	
Total	Proyectado	18.110.950	18,11	721,43		500.000		10.000	20.000	,80	
Total	Realizado	12.480.446	34,52	721,25	80.625	203.532	38.365	3.815	12.328	,56	58
Total	% Realizado	71	191	100		41		38	62	70	

		Total Ingreso Neto ($)	X Ingreso Neto p/Secc. ($)	X Ingreso Neto p/HA ($)	X Ganancia p/Kilo de Producción ($)
Paraguarí Ltd.	Proyectado				
"	Realizado	(1.030.853)	(31.648)	(128.857)	(10,41)
"	% Realizado				
Yaguarón Ltd.	Proyectado				
"	Realizado	1.166.062	79.071	247.016	10,00
"	% Realizado				
Quindy Ltd.	Proyectado				
"	Realizado	3.276.916	192.764	624.190	16,66
"	% Realizado				
Total	Proyectado				
Total	Realizado	3.132.225	100%	41.132	5,41
Total	% Realizado				

Total Producción Vendida fue 58% de la Total Producción y 75% de la Total Producción Entregada

De la Total Producción Vendida, 16% fue vendida localmente y 84% Fue vendida exteriormente

Total Costos de Comercialización fueron 11% de los Costos de la Total Producción

Quindy	Yaguarón	Paraguarí	Costos de :
26,14	53,54	67,85	Producción Entregado p/Kilo
21,27	28,38	31,02	Producción Total p/Kilo
18,11	15,11	18,11	Proyectado
5,00	6,21	3,77	Comercialización p/Kilo Entregado
2,94	1,94	3,1	Comercialización p/Kilo Total

ANNEX I - TAPLE 4

COMPORTAMIENTO DEL PRECIO EXTERNO DEL TOMATE - 1980

ANNEX I - Table 5

PRICE DIFFERENCES AT EACH LEVEL OF THE MARKETING CHANNEL

PRODUCT	VARIETY	SALE UNITS	FARMER SELLS TO ASSEMBLER	ASSEMBLER SELLS TO WHOLESALER	WHOLESALER SELLS TO INTERMEDIARY	INTERMEDIARY SELLS TO RETAILER	RETAILER SELLS TO CONSUMER	OBSERVATIONS
POTATO	ROSADA	KG	$ 40		-->	$ 60	$ 80-REGULAR $ 100-LARGE	CLASSIFIED BY RETAILER
			$ 40	$ 60	.65	$ 80-85	$ 120-REGULAR $ 140-LARGE	PRICES IN THE OTHER MARKET ZONES
	AGRIA CRUZ	KG	$ 20		>	$ 30	$ 40-REGULAR $ 50-LARGE	OVAL TYPE SOLD IN MARKET IV (SMALL)
BANANA	OURO	DOZEN	$ 40-50(GREEN) + $ 5 IF YELLOW		>	$ 60 $ 70	$ 80-SMALL $ 100-LARGE $ 120-VERY LARGE	MERCHANT HAS OWN RIPENING FACILITY
	CARAPE	DOZEN	$ 20-30(green) + $ 5 IF YELLOW		>	$ 40-50	$ 40-SMALL $ 60-LARGE $ 70-VERY LARGE	AS MANY AS 5 DIFFERENT VARIETIES
	CARAPE (BRAZIL)	DOZEN				$ 70	$ 120	INDEPENDENT TRUCKERS
STRAWBERRY	NATIONAL	KG	$ 100			¢200	> $ 500	SOME SOLD DOOR TO DOOR BY THE FARMERS AT LOWER PRICES
	BRAZIL	1/4 KG				¢150	$ 250	INDEPENDENT TRUCKERS
PINEAPPLE	CAYENNE LISA	PAIRS	$ 60-80	$ 65-85	-->	$ 100-200	$ 150-SMALL $ 175-MEDIUM $ 200-LARGE	
	ABACACHI (NATIONAL AND BRAZILIAN)	PAIRS	$ 30-40	$ 55-45	>	$ 45-55	$ 60-SMALL $ 70-MEDIUM $ 100-LARGE	

SOURCE : INTERVIEWS WITH MR.CARLOS BRITTO FIGUEIREDO AND MR. IWAO ISHIDA

ANNEX I - Table 6

DETALLE DE GASTOS TOTALES DE TOMATES

GASTOS LOCALES	₲	
Impuestos	235.543.-	
Personal	1.864.928.-	
Alquiler	164.745.-	
Otros	41.496.-	
Flete (Asunción/Bs. Aires)	2.948.524.-	
Envases	1.560.184.-	
Despacho	1.593.596.-	
Gastos Bancarios	225.199.-	
Procesamiento	3.378.-	
Estiba	4.511.-	
Comisión Asesor	784.495.-	9.426.599.-
GASTOS EN BUENOS AIRES		
Comisión Rematador	2.579.545.-	
Impuesto Municipal	567.499.-	
Descarga en Mercado	186.364.-	
Entrada al Mercado	322.463.-	
Tramitación Certificado	43.542.-	
Despacho en Clorinda (R.A.)	1.388.908.-	
Comisión Importador	515.914.-	
Impuestos a las Ganancias	1.330.396.-	6.934.631.-
COSTO TOTAL		₲ 16.361.230.-

COSTO UNITARIO 1980

16.361.230 ₲ '/. 8.500 cajones = ₲ 1.924, 85 c/ cajón

1.925,85 '/. 25 = ₲ 77 cada kilo.

INGRESOS POR TOMATES DESCONTADOS LOS GASTOS EN EL EXTERIOR

Desde Bs. Aires	₲ 24.476.599	'/. 126	=	194.258,72 U$S
Venta Local	" 1.702.794	'/. 126	=	13.514,24 U$S
	₲ 26.179.393.-			207.772,96 U$S

R E S U M E N

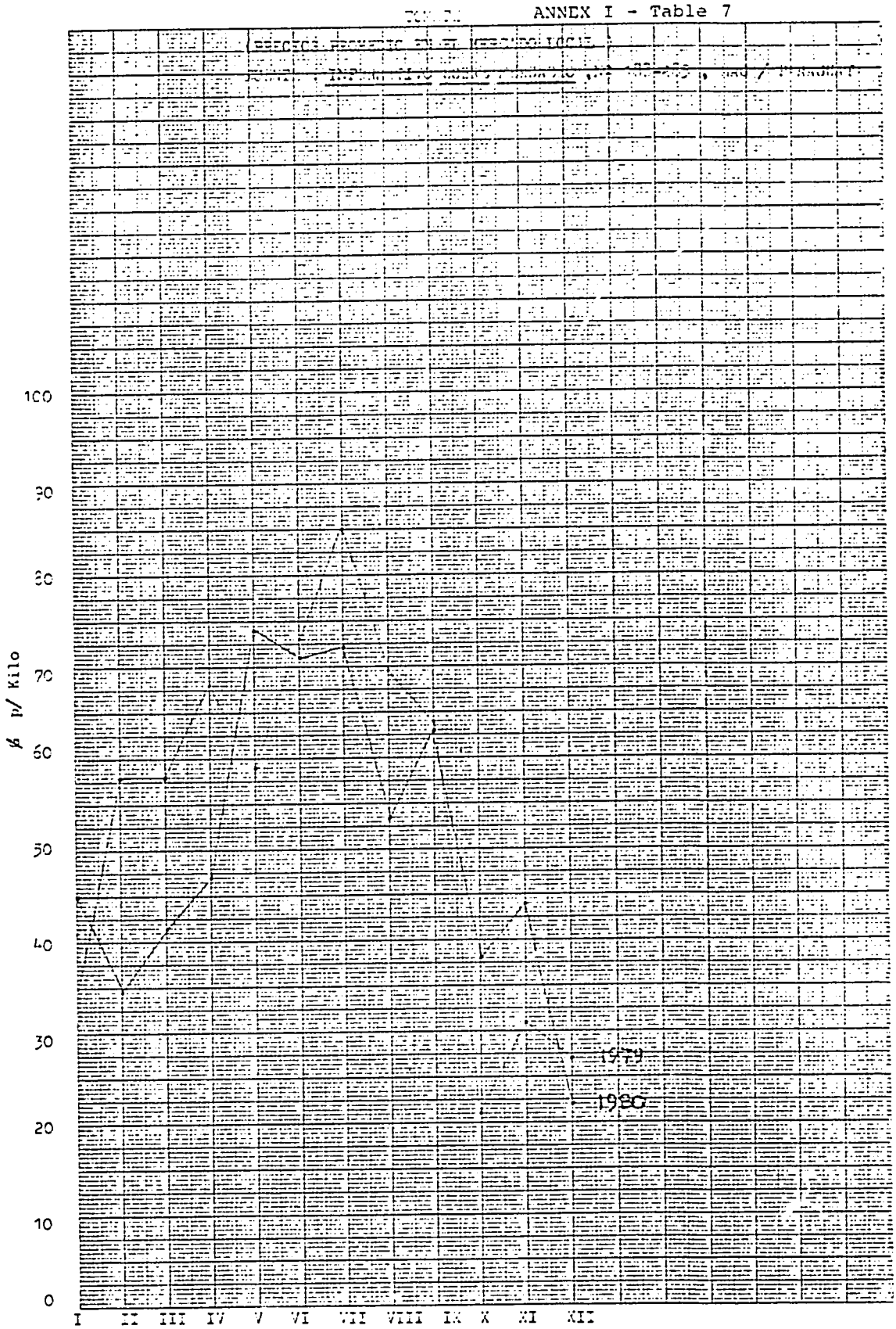
Total Ingresos	₲ 26.179.393.-
Total Gastos Locales	" 9.426.599.-
Saldo (+)	₲ 16.752.794.-

ANNEX I - Table 7

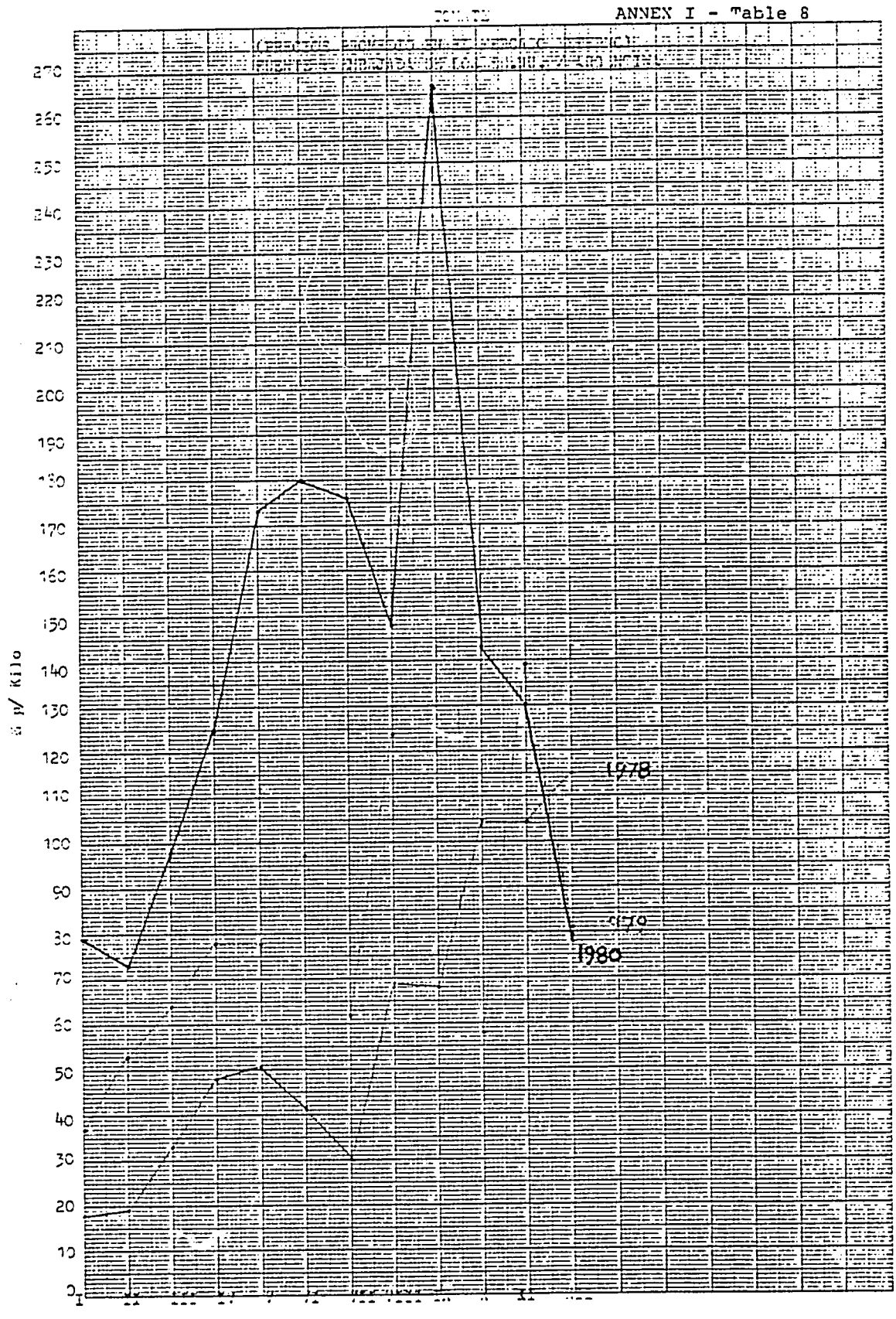
TOMATE

(PRECIOS PROMEDIO EN EL MERCADO LOCAL)

FUENTE: INFORMATIVO SOBRE MERCADO, No 188-285, MAG/PARAGUAY



TOMATE
(PRECIOS PROMEDIO EN EL MERCADO EXTERNO)
FUENTE: EMBAJADA DE LOS EE.UU./ARGENTINA



ANNEX II - TABLE 1

Type of Farm: Tomatoes

Owner: Juana Tonanes/Caludio Candia Quiindy
Farm size: 6 hectares. Simulation for ½ hectare of tomatoes
Procedure: Data on same farm, before and after adoption of tomato progra

Item	Quantity	Replacement Price ¢	Type-Farm Investment Value ¢	Useful Life Yrs.	Annual Depreciation ¢
Land, 6 hectares					
½ hectare for residence	5½	550,000	550,000	-	-
Structures G 100,000					
½ for residence	-	100,000	50,000	25	4,000
Plow	1	25,000	12,500	5	5,000
Cultivator	1	6,000	3,000	4	1,500
Hoes	4	4,800	2,400	2	2,400
Axe	1	2,000	1,000	2	1,000
Shovel	1	600	300	2	300
Rake	1	600	300	2	300
Sprayer	1	10,000	5,000	5	2,000
Oxen	2	70,000	35,000	10	7,000
Cows	2	70,000	35,000	-	-
Residual value		-30,000	-	-	-
Depreciable value		40,000	-	8	5,000
Barbed wired	2 (rolls)	14,000	7,000	7	2,000
Total		823,000	701,500		30,500

1/ Current investment value = ½ of current replacement price for depreciable items.

ANNEX II - TABLE 1(b)

FARM INVESTMENT ACCOUNT (PROGRAM)

Type of Farm: Tomatoes

Item	Quantity	Replacement Price ₵	Type-Farm Investment Value ₵	Useful Life Yrs.	Annual Depreciation ₵
Investments per Table 1(a)	-	823,000	701,500	-	30,500
Pump 1/	1	88,900	44,450	5	17,780
Hoses 2/	-	19,050	9,525	3	6,350
Tomato wire, ½ ha. 3/	-	20,000	10,000	4	5,000
Coop membership fee	-	3,000	3,000		-
Total		953,950	768,475		59,630

1/ Purchase price ₵70,000 + interest charges (18% for 3 years on average loan of 10,000) of ₵ 18,900.

2/ Purchase price ₵15,000 + interest charges of 18% for 3 years on average loan of ₵7,500 = ₵4,050.

3/ Reimbursable at termination of membership.

ANNEX II - TABLE 2

ANNUAL INCOME ACCOUNT (TRADITIONAL)

Type Farm: Tomatoes

Crop	Area	Production	Sales	Family Consumption	Price[1] ₿	Sale Value ₿	Family Consumption Value ₿
Cotton	1 ha.	500 kg	500 kg	-	52/kg	26,000	-
Poroto Beans	½ ha.	300 kg	150 kg	-	50/kg	7,500	-
			-	150 kg	65/kg	-	9,750
Mandioca	1 ha.	3 tons	-	3 tons	15/kg	-	45,000
Melon	-	-	-	-	-	15,000	-
Maiz, Chipa	½ ha.	400 kg	-	400 kg	25/kg	-	10,000
Maiz, Venezuela No. 1[2]	½ ha.	500 kg	-	-	-	-	-
Peanuts	¼ ha.	200 kg	-	200 kg	50/kg	-	10,000
Coco	-	80 boxes	80 boxes	-	120/box	9,600	-
Pigs	-	2 each	-	2 each	5,000/ea.	-	10,000
Chickens	-	50 each	-	50 each	400/ea.	-	20,000
Milk	-	1,530 liter	350 litres	-	.50/l.	17,500	-
			-	1,000 l.	70/l.	-	70,000
Calf		1	1	-	25,000/ea.	25,000	-
Total						100,600	174,750

1/ Sold products valued at actual gross price received by farmer. Family consumption valued at retail purchase price in the local market.

2/ Fed to animals; value subsumed in animal products income.

ANNEX II - TABLE 3

ANNUAL EXPENSE ACCOUNT (TRADITIONAL)

Type of Farm: Tomatoes

Item	Quantity	Unit Price	Cost
Cotton seed, 1 ha.	25 kg.	35/kg.	875
Insecticide			
Velmat	2 ls.	3,100/l.	6,200
Azodrin	1 l.	1,800/l.	1,800
Chicks	60 ea.	50/ea.	3,000
Implement repairs			
Plow			3,000
Cultivator			2,000
Sprayer			1,500
Hired labor for cotton (9 3/8 m.d.)	250/kg.	15/kg.	3,750
T O T A L			22,125

ANNEX II - TABLE 4

FAMILY LABOR (TRADITIONAL & PROGRAM)

Type Farm: Tomatoes

Item	Days	Imputed Rate ¢	Value ¢
Off-farm	7	-	20,000
On-farm	213	400	85,200
Total	220		105,200

Note: Man works only; woman and children are not economically active.

ANNEX II - TABLE 5

CURRENT ACCOUNT SUMMARY

Type Farm: Tomatoes

Account	Traditional ₲	Program ₲	Program Effect Absolute ₲	Program Effect Relative %
Income				
Sales	100,600	885,040		
Family Consumption	174,750	174,750		
Total Income	275,350	1,059,790	784,440	284
Expenses				
Hired Labor (Tables 3A & B)	3,750	29,875		
Depreciation (Tables 1A & B)	30,500	59,630		
Other Expenses (Tables 3A & B)	18,375	137,301		
Interest on Coop loans (Tables 3A & B)	-	47,927		
Total Expenses	52,625	274,733	222,108	422
Net Income				
Family Farm Income (Lines 3-8)	222,725	785,057		
Off-Farm Income (Table 4)	20,000	20,000		
Family Income (lines 9 + 10)	242,725	805,057	562,332	231

Production loan: 1980 for ¼ ha. ₲171,275, equivalent for ½ ha. to ₲342,550 @ 18%, 9 months = ₲46,244.

Marketing loan: 1980 for ¼ ha. ₲18,700, equivalent for ½ ha. to ₲37,400 @ 18%, 3 months = ₲1.683.

Note: Interest on equipment loan is entered in Table 1B.

ANNEX II - TABLE 6

ANALYSIS OF ANNUAL FAMILY INCOME

Type Farm: Tomatoes

Item	Traditional ¢	Program ¢	Program Effect Absolute ¢	Program Effect Relative %
1. Family income (Table 5, line 11)	242,725	805,057	562,332	232
2. Family labor imputed income (Table 4, total)	105,200	105,200		
3. Entrepreneurial imputed income or profit (lines 1 - 2)	137,525	699,857	562,332	408
4. Investment, excl. land (Tables A&B, totals)	151,500	218,474	66,974	44
5. Annual cost (Table 5, line 8, plus table 6, line 2)	157,825	379,933	222,108	141
6. Gross income (Tables 2A and B, total)	275,350	1,059,790	784,440	285
7. Per capita family income (line 1/5 persons in the type family)	48,545	161,011	112,466	232
8. Annual rate of return:				
a. On investment, excl. land[1/] (lines 3/4)	91%	320%	840%	-
b. On annual cost (lines 3/5)	87%	184%	253%	-
c. On gross income (lines 3/6)	50%	66%	72%	-

1/ The return on the land investment is excluded from this table. Based on the farmer's estimate, land value per hectare was ¢1.1 million currently and ¢0.5 million 5 years previously. This will increase corresponds to an annual compound appreciation rate of 15%.

ANNEX II - TABLE 7

MARGINAL PRODUCTION COST PER KG. OF TOMATOES

Type Farm: Tomatoes

	Item	Amount ¢
1.	Marginal farm cost (Table 6, line 5)	222,108
2.	Marginal investment cost, ¢66,974 (Table 6, line 4) @ 18% interest	12,055
3.	Decrease in gross cotton income (Table 2(a) Total - Table 2(b) total + Table 2(b) tomato)	13,000
4.	Total Marginal farm cost (lines 1, 2, 3)	247,163
5.	Tomato production (Table 2(b))	13,600 kg.
6.	Marginal cost per kg. (lines 4/5)	18.17
7.	Average sale price per kg. (Table 2(b))	58.64
8.	Average marginal profit per kg. (lines 7/6)	40.47
9.	Ratio: Marginal Profit on tomato sales (lines 8/7)	69%

ANNEX III - TABLE 1

TOMATO EXPORT COST ANALYSIS BY GRADES

Distribution of Costs Ad Valorem and Per Rate

			Quantity	Value
A.	BUENOS AIRES COSTS	¢	8500 crates	¢32,455,502
1.	Ad Valorem Charges			
	Auction Commission	2,579,545		
	Municipal Tax	567,499		
	Dispatch in Clorinda	1,388.908		
	Imported Commission	515,914		
	Income Tax	1,330,396		
	Total	6,382,262		
	Exchange Rate Adjustment	132/126		
	Adj. Total	6,686,179		20.60%
2.	Per Rate Charges			
	Unloading	186,564		
	Entry	322,463		
	Certificate	43,542		
	Total	552,369		
	Exchange Rate Adjustment	132/126		
	Adj. Total	578,672	68.08	
	Total B.A. Charges, Adjusted	7,264,851		
B.	ASUNCION COSTS			25,190,651
	Ad Valorem Charges			
	Tax	235,543		
	Dispatch-Customs	1,593,596		
	Bank costs	225,199		
	Advisor Commission	784,495		
	Total	2,838,833		11.27%

(Annex III - Table 1, continued)

		Quantity	Value
2.	Per Crate Charges		
	Personnel	1,864,928	
	Rent	164,745	
	Other	41,496	
	Hawling	2,948,524	
	Containers	1,560,184	
	Processing	3,378	
	Stevedoring	4,511	
	Subtotal	6,587,766	
	Less receipts for local sale	1,702,794	
	N E T T O T A L	4,884,972	574,70

ANNEX III - TABLE 2

SUMMARY OF COSTS

	Ad Valorum	Per Rate	Per Kg.
ASUNCION	11.27%	$574.70	$22.99
BUENOS AIRES	20.60%	68.08	2.72
TOTAL WEIGHTED	29.55%	$635.09	$25.40

Factors derived from calculation procedure shown in Table 3.

ANNEX III - TABLE 2(b)

ANNUAL INCOME ACCOUNT (PROGRAM)

Type Farm: Tomatoes

Crop	Area	Production	Sales	Family Consumption	Price[1] ₡	Sale Value ₡	Family Consumption Value ₡
Cotton	½ ha.	250 kg	250 kg	-	52/kg	13,000	-
Tomatoes[2]	½ha.	13,600 kg		-			
Export (Coop)			10,080 kg	-	64/kg[4]	645,120	-
Local (Coop)			2,160 kg	-	34/kg[4]	73.440	-
Local (x-coop)[5]			1,360 kg	-	58/kg	78,880	-
Porota beans	½ ha.	300 kg	150 kg	-	50/kg	7,500	-
			-	150 kg	65/kg	-	9,750
Mandioca	1 ha.	3 tons	-	3 tons	15/kg	-	45,000
Melon	-	-	-	-	-	15,000	-
Maiz, Chipa	½ ha.	400 kg	-	450 kg	25/kg	-	10,000
Maiz, Venezuela No. 1[3]	½ ha.	500 kg	-	-	-	-	-
Peanuts	½ ha.	200 kg	-	200 kg	50/kg	-	10,000
Coco	-	80 boxes	80 boxes	-	120/box	9,600	-
Pigs	-	2 each	-	2 each	5,000/ea.	-	10,000
Chickens	-	50 each	-	50 each	400/each	-	20,000
Milk	-	1,350 l.	350 l.	-	50/l.	17,500	-
			-	1,000 l.	70/l.	-	70,000
Calf	-	1 each	1 each	-	25,000/ea.	2,500	-
TOTAL						885,040	174,750

1/ See table 2(a), footnote 1.

2/ Normal annual production reduced 20% due to destruction of crop due to freezes and hail 1 year in 5 years.

3/ See table 2(a), footnote 2

4/ Net price paid or credited to farmer CREDICOOP price paid to Quiindy cooperative of ₡40 respectively, less ₡6/kg. deducted by the cooperative for services.

5/ 10% of production @ average price of coop sale; sold directly by farmers.

ANNEX III - TABLE 3

Tomatoes: Buenos Aires sale price by grades, cost margins, and net income Asuncion, per kg., 1980 marketing season.

Color class		Size Class Cero	Primera	Extra
Verde	B.A. price	108.13	129.12	137.74
	- B.A. ad valorem 20.60%	22.27	26.60	28.37
	- B.A. per kg. ¢2.72	2.72	2.72	2.72
	= net, B.A.	83.00	99.80	106.65
	- Asuncion ad valorem 11.27%	9.35	11.25	12.02
	- Asuncion per kg ¢22.99	22.99	22.99	22.99
	= Net, Asuncion	50.66	65.56	71.64
Pintada	B.A. price	150.29	177.84	187.40
	- B.A. ad valorem 20.60%	30.96	36.64	38.60
	- B.A. per kg. ¢2.72	2.72	2.72	2.72
	= Net B.A.	116.61	138.48	146.08
	- Asuncion ad valorem 11.27%	13.14	15.61	16.46
	- Asuncion per kg. ¢22.99	22.99	22.99	22.99
	= Net, Asuncion	80.48	99.88	106.63
Colorada	B.A. Price	146.36	171.47	184.96
	- B.A. ad valorem 20.60%	30.15	35.32	38.10
	- B.A. per kg. ¢2.72	2.72	2.72	2.72
	= Net B.A.	113.49	133.43	144.14
	- Asuncion ad valorem 11.27%	12.79	15.04	16.24
	- Asuncion per kg. ¢22.99	22.99	22.99	22.99
	= Net, Asuncion	77.71	95.40	104.91

ANNEX III - TABLE 3 (b)

ANNUAL EXPENSE ACCOUNT (PROGRAM)

Type Farm: Tomatoes

Item	Quantity	Unit Price	Cost
Cotton seed, ½ ha.	12½ kg.	35/kg	437
Tomato seed, ½ha.			
Noyomi, 0.35 ha.	1.4 cans	4,300/can	6,020
Giant St. Cruz, 0.15 ha.	18 grams	24/gram	432
Fertilizer, ½ ha.	7 - 50 k. bags	3,500/bag	24,500
Insecticides			
Cotton, ½ ha.			
Velmat	1 liter	3,100/liter	3,100
Azodrin	½ liter	1,800/liter	900
Tomatoes, ½ ha.			
Rogor L-40	1 liter	1,300/liter	1,300
Carvaril	5 kg.	1,300/kg.	6,500
Fungicides, tomatoes			
Cuprovit	5 kg.	800/kg.	4,000
Dithane	5 kg.	800/kg.	4,000
Bamboo poles	12,000	5/each	60,000
Fuel	96 liters	122/liter	11,712
Oil for fuel	-	-	2,700
String	14 rolls	300/roll	4,200
Implement repair per table 3(a)	-	-	6,500
Hired labor for --			
Cotton (4 2/3 m.d)	125 kg.	15/kg	1,875
Tomatoes	70 man-days	400/man-days	28,000
Coop administrative charge			1,000
TOTAL			167,176

ANNEX IV

Tomato Price Spreads Asuncion-Buenos Aires,
1980 Marketing Season

The price spreads herein are calculated in Guaranies. However the reference memorandum liquidated the US$ receipts from Buenos Aires at the official rate of exchange, ₲126/US$. However, that rate applies only to the "minimum price" of US$0.30 per kg[2/]. The remainder of the dollar receipts were actually liquidated at the free rate, which according to Lic. Talavera approximated ₲132. The difference in ₲ receipts because of the dual rates is derived as follows for the 215,000 kg. of tomatoes exported:

1.	$0.35 x 215,000 kg.	$ 75,250.00
2.	Net income received from Buenos Aires calculated at the official rate of 126	$194,258.72
3.	$ receipts to be liquidated @ 132 (lines 2 - 1)	$119,008.72
4.	Liquidation @ 132 (line 3 x 132)	₲15,709,151
5.	Liquidation @ 126 (line 1 x 126)	₲ 9,481,500
6.	Actual receipts from Buenos Aires (lines 4 and 5)	₲25,190,651

1/ Source: Memorandum to Juan Peralto P. from Jorge Talavera, February 5, 1981.

2/ Banco Central de Paraguay. Precios Minimas de Exportacion. Cartilla No. 86 - Ano 1980. Asuncion, April 1, 1981.

The charges in Buenos Aires were paid in dollars but were entered in the memorandum at the Guarani equivalent using the 126 rate. Since, these costs came out of the gross dollar payments, they are recalculated herein at the 132 rate, as follows:

$$\frac{₲6,934,631}{126} \times 132 = ₲7,264,851$$

Price Spread Differentials

		Total ₲	Per kg ₲
1.	Sale price in Buenos Aires, 215,000	32,455,502	150.96
2.	- Costs in Buenos Aires	-7,264,851	-33.79
3.	= CIF Buenos Aires	=25,190,651	=117.17
4.	- Hauling, Asuncion to Buenos Aires	-2,948,524	-13.71
5.	- Other costs in Asuncion	-6,478,075	-30.13
6.	+ Receipts for sale in Asuncion of non-exportable grades	+ 1,702,794	+ 7.92
7.	= FOB Asuncion, exportable	17,466,846	=81.25
8.	Classification loss as follows: Exportable 215,000 kg. - 59.49% Local Sale 55,301 kg. - 15.30% Cull 91,127 kg. - 25.21% Classification loss = line 7 (100-59.49%)	7,075,819	- 32.91
9.	CIF Asuncion, delivery from producing areas (lines 7 - 8)	10,391.027	= 48.34

ANNEX V

UNITED STATES STANDARDS

FOR GRADES OF

FRESH TOMATOES

EFFECTIVE DECEMBER 1, 1973
AS AMENDED NOVEMBER 29, 1973, FEBRUARY 1, 1975,
AND APRIL 15, 1976

U.S. DEPARTMENT OF AGRICULTURE
FOOD SAFETY AND QUALITY SERVICE
WASHINGTON, D.C.

UNITED STATES STANDARDS FOR GRADES OF FRESH TOMATOES [1]

SOURCE: 38 FR 23931, Sept. 5, 1973, unless otherwise noted. Redesignated at 42 FR 32514, June 27, 1977.

Effective December 1, 1973
As amended November 29, 1973 (38 F.R. 32920), February 1, 1975 (40 F.R. 2791), and April 15, 1976 (41 F.R. 11464)

AUTHORITY: The provisions of this subpart issued under secs. 203, 205, 60 Stat. 1087, as amended, 1090 as amended; 7 U.S.C. 1622, 1624.

[1] Compliance with the provisions of these standards shall not excuse failure to comply with the provisions of the Federal Food, Drug and Cosmetic Act, or with applicable State laws and regulations.

GRADES

§ 2851.1855 U.S. No. 1.

"U.S. No. 1" consists of tomatoes which meet the following requirements:

(a) Basic requirements:
(1) Similar varietal characteristics;
(2) Mature;
(3) Not overripe or soft;
(4) Clean;
(5) Well developed;
(6) Fairly well formed; and,
(7) Fairly smooth.
(b) Free from:
(1) Decay;
(2) Freezing injury; and
(3) Sunscald.
(c) Not damaged by any other cause.
(d) For tolerances see § 2851.1861.

§ 2851.1856 U.S. Combination.

"U.S. Combination" consists of a combination of U.S. No. 1 and U.S. No. 2 tomatoes: *Provided*, That at least 60 percent, by count, meet the requirements of U.S. No. 1 grade.
(a) For tolerances see § 2851.1861.

§ 2851.1857 U.S. No. 2.

"U.S. No. 2" consists of tomatoes which meet the following requirements:
(a) Basic requirements:
(1) Similar varietal characteristics;
(2) Mature;
(3) Not overripe or soft;
(4) Clean;
(5) Well developed;
(6) Reasonably well formed; and,
(7) Not more than slightly rough.
(b) Free from:
(1) Decay;
(2) Freezing injury; and,
(3) Sunscald.
(c) Not seriously damaged by any other cause.
(d) For tolerances see § 2851.1861.

§ 2851.1858 U.S. No. 3.

"U.S. No. 3" consists of tomatoes which meet the following requirements:
(a) Basic requirements:
(1) Similar varietal characteristics;
(2) Mature;
(3) Not overripe or soft;
(4) Clean;
(5) Well developed; and,
(6) May be misshapen,
(b) Free from:
(1) Decay; and,
(2) Freezing injury.
(c) Not seriously damaged by:
(1) Sunscald.
(d) Not very seriously damaged by any other cause.
(e) For tolerances see § 2851.1861.

SIZE

§ 2851.1859 Size.

(a) The size of tomatoes packed in any type container, when specified according to the size designations set forth in Table I, shall be within the ranges of diameters specified for the respective designations.

(1) In determining compliance with the size designations the measurement for minimum diameter shall be the largest diameter of the tomato measured at right angles to a line from the stem end to the blossom end. The measurement for maximum diameter shall be the smallest dimension of the tomato determined by passing the tomato through a round opening in any position.

(b) In lieu of specifying size according to the above size designations, the size of tomatoes in any type container may be specified in terms of minimum diameter or of minimum and maximum diameters expressed in whole inches, whole inches and not less than thirty-second inch fractions thereof, or millimeters, in accordance with the facts.

(c) For tolerances see § 2851.1861.

TABLE I

Size designations	Inches		Millimeters	
	Minimum diameter [2]	Maximum diameter [3]	Minimum diameter [2]	Maximum diameter [3]
Extra small	1 9/32	2 2/32	48	54
Small	2 2/32	2 9/32	54	58
Medium	2 9/32	2 17/32	58	64
Large	2 17/32	2 29/32	64	73
Extra Large	2 29/32	3 13/32	73	88
Maximum large	3 13/32	.....	88	.....

[2] Will not pass through a round opening of the designated diameter when tomato is placed with the greatest transverse diameter across the opening.
[3] Will pass through a round opening of the designated diameter in any position.

COLOR CLASSIFICATION

§ 2851.1860 Color classification.

(a) The following terms may be used, when specified in connection with the grade statement, in describing the color as an indication of the stage of ripeness of any lot of mature tomatoes of a red fleshed variety:

(1) *Green.* "Green" means that the surface of the tomato is completely green in color. The shade of green color may vary from light to dark;

(2) *Breakers.* "Breakers" means that there is a definite break in color from green to tannish-yellow, pink or red on not more than 10 percent of the surface;

(3) *Turning.* "Turning" means that more than 10 percent but not more than 30 percent of the surface, in the aggregate, shows a definite change in color from green to tannish-yellow, pink, red, or a combination thereof;

(4) *Pink.* "Pink" means that more than 30 percent but not more than 60 percent of the surface, in the aggregate, shows pink or red color;

(5) *Light red.* "Light red" means that more than 60 percent of the surface, in the aggregate, shows pinkish-red or red: *Provided*, That not more than 90 percent of the surface is red color; and,

(6) *Red.* "Red" means that more than 90 percent of the surface, in the aggregate, shows red color.

(b) Any lot of tomatoes which does not meet the requirements of any of the above color designations may be designated as "Mixed Color".

(c) For tolerances see § 2851.1861.

(d) Tomato color standards U.S.D.A. Visual Aid TM—L—1 consists of a chart containing twelve color photographs illustrating the color classification requirements, as set forth in this section. This visual aid may be examined in the Fruit and Vegetable Division, FSQS, U.S. Department of Agriculture, South Building, Washington, D.C. 20250; in any field office of the Fresh Fruit and Vegetable Inspection Service; or upon request of any authorized inspector of such Service. Duplicates of this visual aid may be purchased from The John Henry Co., Post Office Box 1410, Lansing, Michigan 48904.

Tolerances

§ 2851.1861 Tolerances.

In order to allow for variations incident to proper grading and handling in each of the foregoing grades, the following tolerances, by count, are provided as specified:

(a) *U.S. No. 1*—(1) *For defects at shipping point.*[2] Ten percent for tomatoes in any lot which fail to meet the requirements for this grade: *Provided,* That not more than one-half of this tolerance, or 5 percent, shall be allowed for defects causing very serious damage, including therein not more than 1 percent for tomatoes which are soft or affected by decay; and,

(2) *For defects en route or at destination.* Fifteen percent for tomatoes in any lot which fail to meet the requirements for this grade: *Provided,* That included in this amount not more than the following percentages shall be allowed for defects listed:

(i) Five percent for tomatoes which are soft or affected by decay;

(ii) Ten percent for tomatoes which are damaged by shoulder bruises or by discolored or sunken scars on any parts of the tomatoes; and,

(iii) Ten percent for tomatoes which are otherwise defective: *And provided further,* That not more than 5 percent shall be allowed for tomatoes which are very seriously damaged by any cause, exclusive of soft or decayed tomatoes.

(b) *U.S. Combination*—(1) *For defects at shipping point.*[2] Ten percent for tomatoes in any lot which fail to meet the requirements of the U.S. No. 2 grade: *Provided,* That not more than one-half of this tolerance, or 5 percent, shall be allowed for defects causing very serious damage, including 1 percent for tomatoes which are soft or affected by decay; and,

(2) *For defects en route or at destination.* Fifteen percent for tomatoes in any lot which fail to meet the requirements of the U.S. No. 2 grade: *Provided,* That included in this amount not more than the following percentages shall be allowed for defects listed:

(i) Five percent for tomatoes which are soft or affected by decay;

(ii) Ten percent for tomatoes which are seriously damaged by shoulder bruises or by discolored or sunken scars on any parts of the tomatoes; and,

(iii) Ten percent for tomatoes which are otherwise defective: *And provided further,* That not more than 5 percent shall be allowed for tomatoes which are very seriously damaged by any cause, exclusive of soft or decayed tomatoes.

(c) *U.S. No. 2*—(1) *For defects at shipping point.*[2] Ten percent for tomatoes in any lot which fail to meet the requirements of this grade: *Provided,* That not more than one-half of this tolerance, or 5 percent, shall be allowed for defects causing very serious damage, including therein not more than 1 percent for tomatoes which are soft or affected by decay; and,

(2) *For defects en route or at destination.* Fifteen percent for tomatoes in any lot which fail to meet the requirements for this grade: *Provided,* That included in this amount not more than the following percentages shall be allowed for defects listed:

(i) Five percent for tomatoes which are soft or affected by decay;

(ii) Ten percent for tomatoes which are seriously damaged by shoulder bruises or by discolored or sunken scars on any parts of the tomatoes; and,

(iii) Ten percent for tomatoes which are otherwise defective: *And provided further,* That not more than 5 percent shall be allowed for tomatoes which are very seriously damaged by any cause, exclusive of soft or decayed tomatoes.

(d) *U.S. No. 3*—(1) *For defects at shipping point.*[2] Ten percent for tomatoes in any lot which fail to meet the requirements of this grade: *Provided,* That not more than one-half of this tolerance, or 5 percent, shall be allowed for tomatoes which are very seriously damaged by insects and not more than one-tenth of the tolerance, or 1 percent, for tomatoes which are soft or affected by decay; and,

(2) *For defects en route or at destination.* Fifteen percent for tomatoes in any lot which fail to meet the requirements for this grade: *Provided,* That included in this amount not more than the following percentages shall be allowed for defects listed:

(i) Five percent for tomatoes which are soft or affected by decay;

(ii) Ten percent for tomatoes which are very seriously damaged by shoulder bruises or by discolored or sunken scars on any parts of the tomatoes; and,

(iii) Ten percent for tomatoes which are otherwise defective: *And provided further,* That not more than 5 percent shall be allowed for tomatoes which are very seriously damaged by insects.

(e) *For off size.* Ten percent for tomatoes in any lot which are smaller than the specified minimum diameter, or larger than the specified maximum diameter.

(f) *For off color.* Ten percent for tomatoes in any lot which fail to meet the color specified, including therein not more than 5 percent for tomatoes which are green in color, when any term other than "Green" is specified.

[2] Shipping point, as used in these standards, means the point of origin of the shipment in producing area or at port of loading for ship stores or overseas shipment, or in the case of shipments from outside the continental United States, the port of entry into the United States.

Application of Tolerances

§ 2851.1862 Application of tolerances.

The contents of individual packages in the lot, based on sample inspection, are subject to the following limitations:

(a) For packages which contain more than 5 pounds (2.27 kg), and a tolerance of 10 percent or more is provided, individual packages shall have not more than 1½ times the tolerance specified, and for a tolerance of less than 10 percent individual packages shall have not more than double the tolerance specified, except that at least one defective and one off size specimen may be allowed in any package: *Provided,* That the averages for the entire lot are within the tolerances specified for the grade; and,

(b) For packages which contain 5 pounds (2.27 kg) or less individual packages shall have not more than 4 times the tolerance specified, except that at least one tomato which is soft, or affected by decay, and one off-size specimen may be permitted in any package: *Provided,* That the averages for the entire lot are within the tolerances specified for the grade.

Standard Weight

§ 2851.1863 Standard weight.

(a) When packages are marked to a net weight of 15 pounds (6.80 kg) or more, the net weight of the contents shall not be less than the designated net weight and shall not exceed the designated weight by more than 2 pounds (0.91 kg).

(b) In order to allow for variations incident to proper sizing, not more than 15 percent, by count, of the packages in any lot may fail to meet the requirements for standard weight.

Definitions

§ 2851.1864 Similar varietal characteristics.

"Similar varietal characteristics" means that the tomatoes are alike as to firmness of flesh and shade of color (for example, soft-fleshed, early maturing varieties are not mixed with firm-fleshed, midseason or late varie-

ties, or bright red varieties mixed with varieties having a purplish tinge).

§ 2851.1865 Mature.

"Mature" means that the tomato has reached the stage of development which will insure a proper completion of the ripening process, and that the contents of two or more seed cavities have developed a jelly-like consistency and the seeds are well developed.

§ 2851.1866 Soft.

"Soft" means that the tomato yields readily to slight pressure.

§ 2851.1867 Clean.

"Clean" means that the tomato is practically free from dirt or other foreign material.

§ 2851.1868 Well developed.

"Well developed" means that the tomatoe shows normal growth. Tomatoes which are ridged and peaked at the stem end, contain dry tissue, and usually contain open spaces below the level of the stem scar, are not considered well developed.

§ 2851.1869 Fairly well formed.

"Fairly well formed" means that the tomato is not more than moderately kidney-shaped, lop-sided, elongated, angular, or otherwise moderately deformed.

§ 2851.1870 Fairly smooth.

"Fairly smooth" means that the tomato is not conspicuously ridged or rough.

§ 2851.1871 Damage.

"Damage" means any specific defect described in § 2851.1877, table II; or an equally objectionable variation of any one of these defects, any other defect, or any combination of defects, which materially detracts from the appearance, or the edible or marketing quality of the tomato.

§ 2851.1872 Reasonably well formed.

"Reasonably well formed" means that the tomato is not decidedly kidney-shaped, lop-sided, elongated, angular, or otherwise decidedly deformed.

§ 2851.1873 Slightly rough.

"Slightly rough" means that the tomato is not decidedly ridged or grooved.

§ 2851.1874 Serious damage.

"Serious damage" means any specific defect described in § 2851.1877, table II; or an equally objectionable variation of any one of these defects, any other defect, or any combination of defects, which seriously detracts from the appearance, or the edible or marketing quality of the tomato.

§ 2851.1875 Misshapen.

"Misshapen" means that the tomato is decidedly kidney-shaped, lop-sided, elongated, angular or otherwise decidedly deformed: *Provided*, That the shape is not affected to an extent that the appearance or the edible quality of the tomato is very seriously affected.

§ 2851.1876 Very serious damage.

"Very serious damage" means any specific defect described in § 2851.1877, table II; or an equally objectionable variation of any one of these defects, any other defect, or any combination of defects, which very seriously detracts from the appearance, or the edible or marketing quality of the tomato.

§ 2851.1877 Classification of defects.

TABLE II

REFERENCES TO AREA, AGGREGATE AREA, LENGTH OR AGGREGATE LENGTH ARE BASED ON A TOMATO HAVING A DIAMETER OF 2½ INCHES (64 MM)[1]

Factor	Damage	Serious damage	Very serious damage
Cuts and broken skins.	Not shallow or not well healed, or shallow, well healed cut more than ½ inch (13mm) in length, or other shallow, well healed skin breaks aggregating more than a circle ⅜ inch (10mm) in diameter.	Not shallow or not well healed, or shallow, well healed cut more than ½ inch (13mm) in length, or other shallow, well healed skin breaks aggregating more than a circle ½ inch (13 mm) in diameter.	Fresh or healed and extending through the tomato wall.
Puffiness	Open space in 1 or more locules materially detracts from appearance of tomato cut through center at right angles to a line from stem to blossom end.	Open space in 1 or more locules seriously detracts from appearance of tomato cut through center at right angles to a line from stem to blossom end.	Open space in 2 or more locules very seriously detracts from appearance of tomato cut through center at right angles to a line from stem to blossom end.
Catfaces	Scars are rough or deep, channels are very deep or wide, channels extend into a locule, or a fairly smooth catface aggregating more than a circle ½ inch (13mm) in diameter.	Scars are rough or deep, channels are very deep or wide, channels extend into a locule, or a fairly smooth catface aggregating more than a circle ¾ inch (19mm) in diameter.	Channels extend into the locule, wall has been weakened to the extent that slight pressure will cause a tomato to leak, or a fairly smooth catface aggregating more than a circle 1 inch (25 mm) in diameter.
Scars (other than catfaces).	No depth and aggregaring more than a circle ⅜ inch (10 mm) in diameter.	No depth and aggregating more than a circle ⅝ inch (16mm) in diameter.	No depth and aggregating more than a circle 1 inch (25mm) in diameter.
Growth cracks (radiating from or concentric to stem scar).	Not well healed, more than ⅛ inch (3mm) in depth, individual radial cracks more than ½ inch (13mm) in length, aggregate length of all radial cracks more than 1 inch (25mm) measured from edge of stem scar. Any lot of tomatoes which are at least turning may have cracks which are not well healed provided they are not leaking.	Not well healed, more than ⅛ inch (3mm) in depth, individual radial cracks more than ¾ inch (19mm) in length, aggregate length of all radial cracks more than 1¾ inches (44mm) measured from edge of stem scar. Any lot of tomatoes which are at least turning may have cracks which are not well healed provided they are not leaking.	Not well healed, more than ¼ inch (6mm) in depth, individual radial cracks more than 1 inch (25mm) in length, aggregate length of all radial cracks more than 2¾ inches (73mm) measured from edge of stem scar. Any lot of tomatoes which are at least turning may have cracks which are not well healed provided they are not leaking, not more than ⅛ inch (3mm) in depth, individual radial cracks are not more than ¾ inch (19mm) in length.
Hail	Deep, rough, not well healed and corked over, or fairly smooth, shallow hailmarks aggregating more than a circle ⅜ inch (10mm) in diameter.	Deep, rough, not well healed and corked over, or fairly smooth, shallow hailmarks aggregating more than a circle ⅝ inch (16mm) in diameter.	Fresh, very deep or fairly smooth, shallow hailmarks aggregating more than a circle 1 inch (25mm) in diameter.
Insect injury	Materially detracts from the appearance or any insect is present in the fruit.	Seriously detracts from the appearance or any insect is present in the fruit.	Very seriously detracts from the appearance or any insect is present in the fruit.

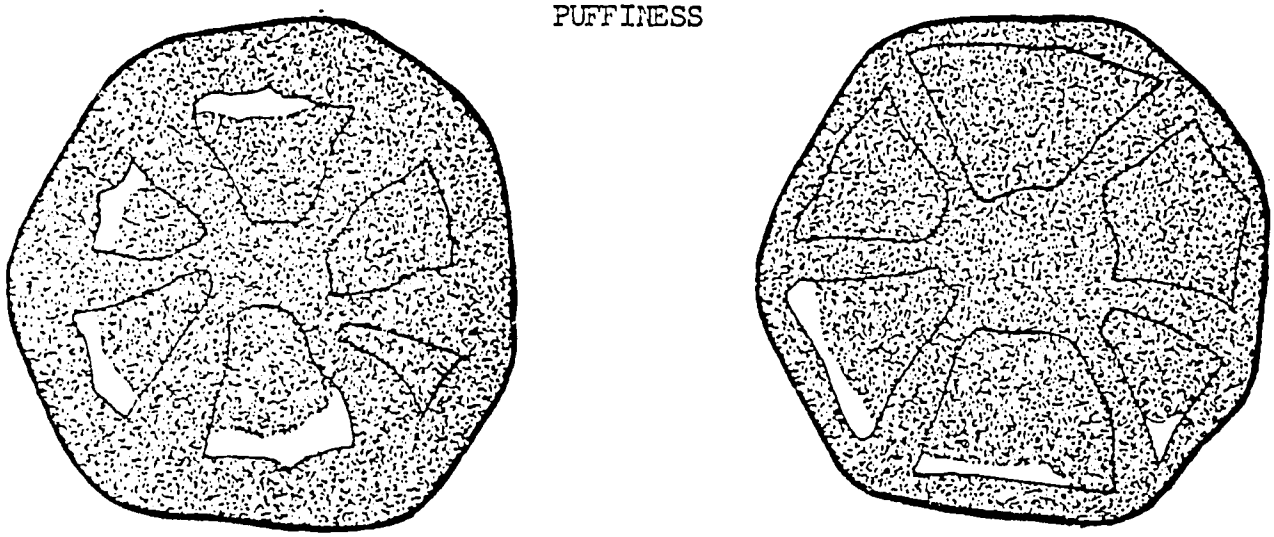
[1] Conversion to metric equivalent made to nearest whole millimeter.

Dated August 22, 1973.

E. L. PETERSON,
Administrator,
Agricultural Marketing Service.

[FR Doc.73-18558 Filed 9-4-73;8:45 am]

PUFFINESS

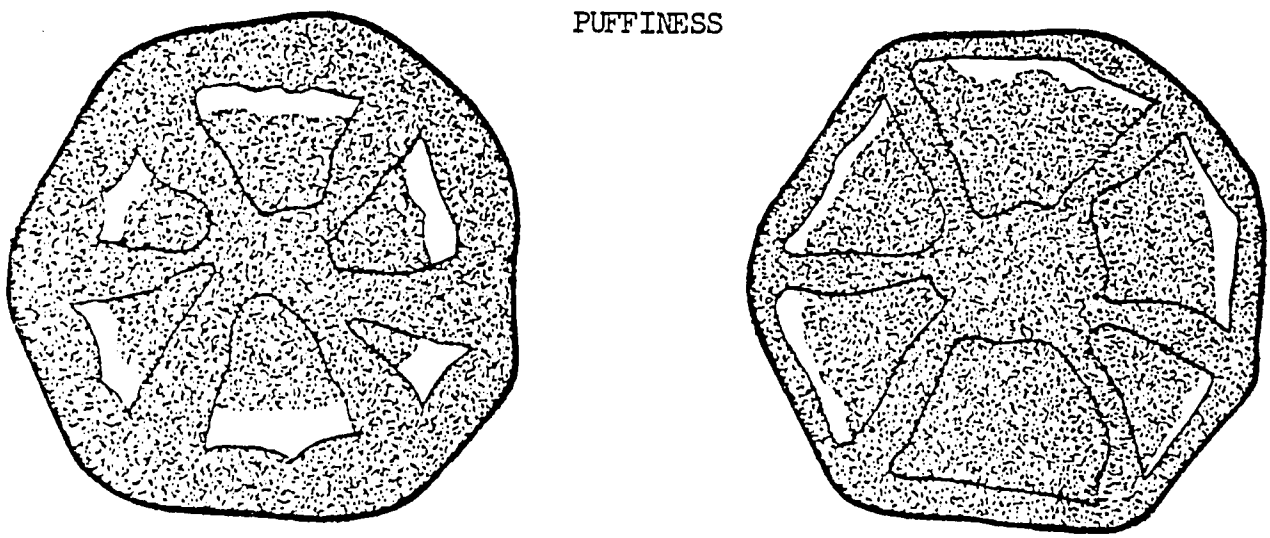


LOWER LIMIT U. S. No. 1

The proportion of open space permitted is dependent upon the thickness of walls. Tomatoes with thicker walls than those in the above illustrations may have proportionately greater amounts of open space. Tomatoes with thinner walls than illustrated shall have proportionately lesser amounts of open space.

DN-949

PUFFINESS

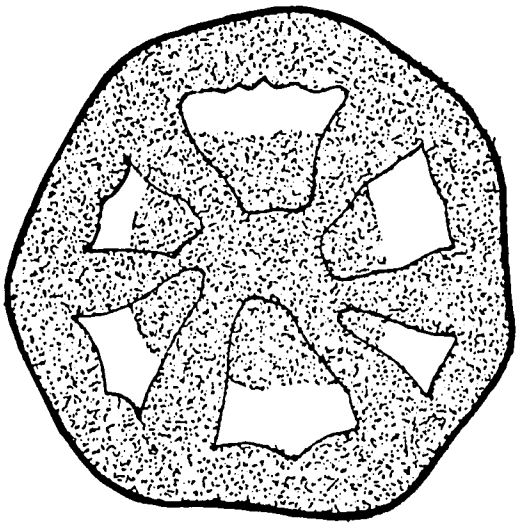


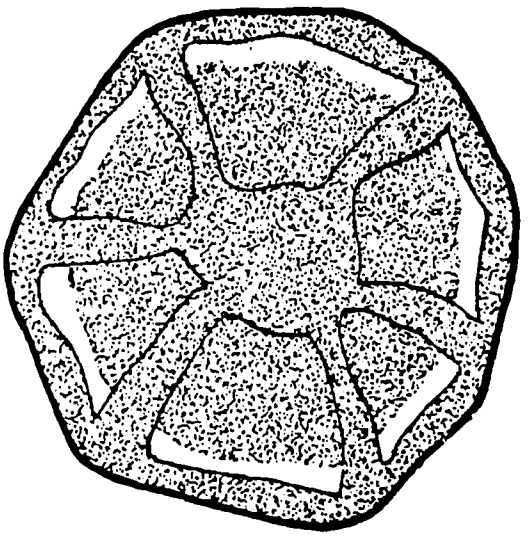
LOWER LIMIT U. S. No. 2

The proportion of open space permitted is dependent upon the thickness of walls. Tomatoes with thicker walls than those in the above illustrations may have proportionately greater amounts of open space. Tomatoes with thinner walls than illustrated shall have proportionately lesser amounts of open space.

DN-950

PUFFINESS



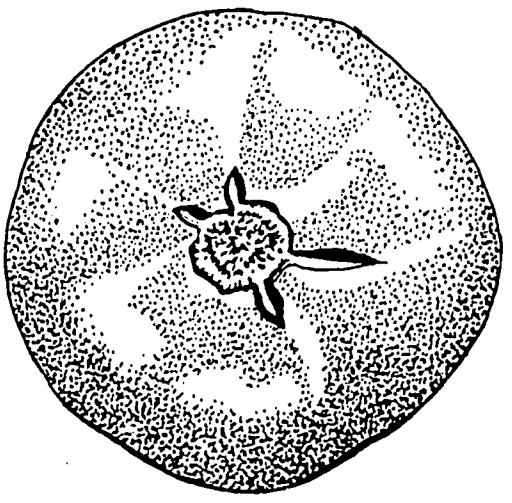


LOWER LIMIT U. S. No. 3

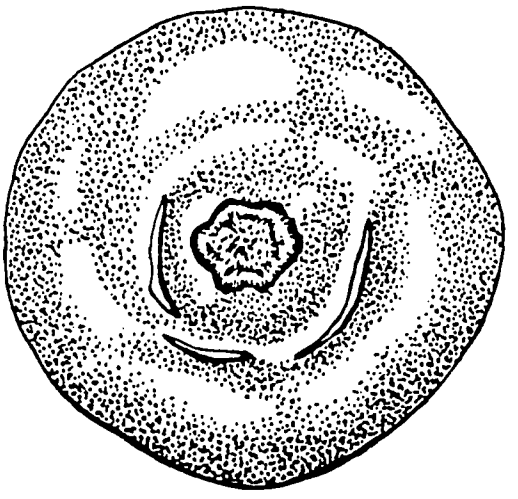
The proportion of open space permitted is dependent upon the thickness of walls. Tomatoes with thicker walls than those in the above illustrations may have proportionately greater amounts of open space. Tomatoes with thinner walls than illustrated shall have proportionately lesser amounts of open space.

DN-951

GROWTH CRACKS



Maximum aggregate length of radial growth cracks permitted on $2\frac{1}{2}$ inch tomato in U.S. No. 1 grade.



Concentric growth cracks which affect appearance to same extent as maximum aggregate length of radial growth cracks permitted in U.S. No. 1 grade.

The above limitations apply in all stages of maturity.

DN-952

ANNEX VI

BACKGROUND ON BANANA MARKETING

(This section was written by Gregory Wyman, Peace Corps Volunteer, assigned to the Commercialization Department, CREDICOOP)

"In Paraguay, there are two major varieties of bananas at the moment, with sub-groups within the two. The first variety, Oro, is in high demand domestically and is short in length (approximately 6 to 8 cm.). Oro is not resistant to the fungus disease 'Mal de Panama,' however, and can only be cultivated in areas without previous histories of this variety. The Oro is being replaced by the variety 'Missour,' which is resistant to Panama disease and sigatoka. The second variety is that of the Carape, which has a longer fruit (10 to 15 cm). Due to having a stem lower in height, it is susceptible to frosts which are common in parts of Paraguay. Within the Carape variety, there are 4 types which are similar to the Carape: Monte Cristo, Congo, Lacatan, and Nanicao. The 1st three of these are scattered throughout Central America; they are good producers of large blossoms with about 10 hands, each having more than two dozen digits that are between 16 and 24 cm. long. But due to their short stem height, they also are affected by the frosts here. Nanicao banana is currently grown in Brazil and has cylindrical blossoms with many hands, each with little difference in size or number between the first or last hand. Digit lengths are between 18 to 25 cm. in length. Nanicao bananas are the best rated bananas in Buenos Aires and throughout Brazil."

"Carape varieties are grown in the following areas: Arroyos y Esteros, Caraguatay, Piribuy, and San Lorenzo. Oro varieties are chiefly grown in Coronel Oviedo, San Estanislao, and from San Pedro to Concepcion in the North along the Brazilian border."[1)]

Banana marketing in Paraguay is dependent upon the variety and also the conditions of the fruits. In interviews with random wholesalers and retailers in the Market No. 4, information was obtained about the marketing channels and price margins at each level (see Annex A9 for illustration).

The Oro banana is sold in dozens and is bought from the farmer by the "acopiador" at a price near ₲40-50 while green, adding ₲5 to the price if they are yellow already or for having to ripen them himself, he will charge off the ₲5 when he sells them. Many "acopiadors" who handle bananas have their own ripening chambers and are able to thus control the timing of the sales, depending upon the demand in the market.

The "acopiador" sell the ripened Oro bananas to a retailer in Market No.4 at ₲60 for the smaller dozens and ₲70 for the larger size dozens. The retailer, in turn, will sell to the consumer at the following prices: ₲80 for small size dozens, ₲100 for large size dozens, and ₲120 for the very large size.

---

1) "Instrucciones Para El Cultivo Del Banano," a pamphlet written by Ing. Agr. Gerardo Lopez Zarate while employed at the MAG.

For the Carape banana, which has the greatest volume of sales, the farmer receives ₲20-30 per green dozen, receiving ₲5 more for already yellow dozens. The "acopiador" again takes the green dozens to his ripening chambers for gassing, adding extra value when he sells them to the retailer, usually at a price near ₲40-50/dozen. The retailer sells them to the consumer at the following prices: ₲40 for small size dozens, ₲60 for the large, and ₲70 for the very large dozens. Brazilian imports of the Carape-type-Nanicao banana are sold by a Brazilian "acopiador" to the retailer for ₲70/dozen, who in turn sells them to the consumer at ₲120 per dozen.

Production statistics collected by the MAG and exportation data available from the Central Bank of Paraguay on bananas were fairly accurate. Banana Carape has almost twice the production that the Oro banana has, while the production of new varieties has gradually increased each year, after a large production drop in 1975. (See Annex B1 and B2). Exportation of bananas is non-existent at this moment.

CREDICOOP does not market bananas at the moment for any of its cooperatives but was originally planning on exportation to Buenos Aires with the Minifundia production in 1982. Taking into account the effects of the latest frosts in Paraguay during the month of June 1981, it would be unrealistic to assume that this would still be under consideration. Frost occurs often during the winter months June to September and almost all bananas in the market at

this moment show definite frost discoloration. Although it is true that the skin is only discolored, this defect reduces the price of the fruit. There are definite possibilities of this occurring with the Minifundia production and it is doubtful that any chill-affected bananas would be of export quality.

Prices of the Carape and Oro bananas received from the Informativo Sobre Mercadeo weekly pamphlet from the MAG show a trend toward higher prices domestically during last 5 months of the 1977-1980 years (See Annex B3 and B4), which would support information received during interviews with wholesalers and retailers. Wholesale monthly prices for bananas in Buenos Aires also reflect this trend (see Annex B5).

ANNEX VII

Type-Farm Simulation For Bananas

Owner:	Daniel Kiscovich, Coronel Oviedo
Farm Size:	6 hectares. Simulation for ½ hectare of bananas.
Procedure:	Date on same farm for prior year, before adoption of banana program, and in first year of banana program. For production years thereafter, simulation using parameters derived from Leguisamin farm, Nemby, and others nearby, per table 8.

ANNEX VII

Table 1

Farm Investment Account (Traditional)

Item	Quantity	Replacement Price ₵	Type-Farm Investment Value 1/ ₵	Useful Life Yrs.	Annual Depreciation ₵
Land, 6 hectares - ½ ha. for residence	5½ ha.	550,000	550,000	-	-
Structures ₵200,000 - ½ for residence	-	100,000	50,000	25	4,000
Fencing:					
Posts @ ₵25	120	3,000	1,500	10	300
Wire @ ₵ 1,200	5 rolls	6,000	3,000	8	750
Plow and Cultivator	2	27,000	13,500	5	5,400
Harrow	1	7,000	3,500	5	1,400
Harrow	1	15,000	7,500	5	3,000

ANNEX VII

Table 1

Farm Investment Account (Traditional)

Item	Quantity	Replacement Price ₲	Type-Farm Investment Value [1] ₲	Useful Life Yrs.	Annual Depreciation ₲
Land, 6 hectares - ½ ha. for residence.	5½ ha.	550,000	550,000	-	-
Structures ₲200,000 - ½ for residence	-	100,000	50,000	25	4,000
Fencing:					
Posts @ ₲25	120	3,000	1,500	10	300
Wire @ ₲ 1,200	5 rolls	6,000	3,000	8	750
Plow and Cultivator	2	27,000	13,500	5	5,400
Harrow	1	7,000	3,500	5	1,400
Harrow	1	15,000	7,500	5	3,000
Sprayer	1	10,000	5,000	5	2,000
Tools	6	7,400	3,700	2	3,700
Oxen	2	100,000	50,000	-	-
Residual Value		-50,000	-	-	-
Depreciable Value		50,000	-	10	5,000
Horse	1	25,000	12,500	-	-
Residual Value		- 5,000	-	-	-
Depreciable Value		20,000	-	15	1,667
Donkey	1	5,000	2,500	15	333
Cart, large	1	25,000	12,500	10	2,500
Cart, small	1	10,000	5,000	10	1,000
Cows	2	200,000	100,000	-	-
Residual Value		-80,000	-	-	-
Depreciable Value		120,000	-	8	15,000
Bull	1	80,000	40,000	-	-
Residual Value		-65,000	-	-	-
Depreciable Value		15,000	-	10	1,500

ANNEX VII

Table 1 (continued)

Farm Investment Account (Traditional)

Item	Quantity	Replacement Price ¢	Type-Farm Investment Value 1/ ¢	Useful Life Yrs.	Annual Depreciation ¢
Hogs, breeding	2	30,000	15,000	-	-
Residual Value		-20,000	-	-	-
Depreciable Value		10,000	-	4	2,500
Hens, laying	12	600	300	-	-
Residual Value		- 400	-	-	-
Depreciable Value		200	-	1	200
TOTAL		980,600	875,500		50,250

1/ Current investment value = ½ of replacement price for depreciable items.

ANNEX VII

Table 2

Farm Investment Account (Program)

Item	Quantity	Replacement Price ₱	Type-Farm Investment Value 1/ ₱	Useful Life Yrs.	Annual Depreciation ₱
Investments per Table 1(a)	-	980,600	875,500	-	50,250
Banana plantation 1/	½ ha.				
Plants @ ₱50	312	15,625			
Fertilizer @ ₱2,500 per bag of 50 kg.	150 kg.	7,500			
Labor:					
Land preparation	8 m.d.				
Holes & planting	8 m.d.				
Cleaning, 6 times/yr. @ 3 m.d. per 100 plants	56 m.d.				
Total @ 5%	72 m.d.	41,040			
Subtotal		64,165			
Interest, 1 yr. @ 18%		11,550			
Total plantation investment		75,715	37,858	8	9,464
Supports @ 100%	600	60,000	30,000	3	20,000
TOTAL		1,116,315	943,358		79,714

1/ Establishment cost based on Leguisamin farm data except for addition of fertilizer which Leguisamin did not use but other nearby farmer did.

2/ Farm labor rate on Kiscovich farm of ₱470 per man-day plus ₱100 for food per man-day.

ANNEX VII

Table 3

Annual Income Account (Traditional)

Crop	Area ha.	Production	Sales	Family Consumption	Price[1] ¢	Sale Value ¢	Family Consumption Value ¢
Cotton	1	1,500 kg.	1,500 kg.	-	50/kg.	75,000	-
Mandioca	3/4	3½ tons	-	3½ tons	15/kg.	-	52,500
Tomatoes	1/10	-	-	-	-	15,000	-
Sugar Cane[2]	1/4	-	-	-	-	-	-
Milk	-	4,860 l.	3,600 l.	-	60/l.	216,000	-
			-	1,080	75/l.	-	81,000
Yearlings	-	2	2	-	15,000/ea.	30,000	-
Hogs	-	34	30	-	6,000/ea.	180,000	-
			-	4	7,000/ea.	-	28,000
Chickens	-	24	-	24	400/ea.	-	9,600
Eggs	-	2,900	2,900	-	20/ea.	58,000	-
Peas	-	1,000 kg.	250	-	20/kg.	5,000	-
				750	20/kg.	-	15,000
Subtotal						579,000	186,100
Lettuce, pepper & onions	1/2	-	-	-	-	100,000	-
TOTAL						679,000	186,000

1/ Sold products valued at actual gross price received by farmer. Family consumption valued at retail purchase price in the local market.

2/ Fed to animals; value subsumed in animal products income.

ANNEX VII

Table 4

Annual Income Account (Program)

Crop	Area ha.	Production	Sales	Family Consumption	Price[1/] ¢	Sale Value ¢	Family Consumption Value ¢
Traditional income less lettuce, pepper and onions per Table 2(a)	-	-	-	-	-	579,000	186,100
Banana[1/]	1/2	625 bunches	625 bchs.	-	375/bunch	234,375	-
TOTAL						813,375	186,100

1/ Production per Table 8; price paid at Coronel Oviedo per Cooperative.

ANNEX VII

Table 5

Annual Expense Account (Traditional)

Item	Quantity	Unit Price ¢	Cost ¢
Cotton seed, 1 ha.	1 bucket	2,000/bucket	2,000
Fertilizer	7 50-kg. bags	2,500/bag	17,500
Other seeds	-	-	5,000
Insecticide	8 litres	1,250/liter	10,000
Implement repairs	-	-	1,500
Hired labor (for cotton)	40 m.d.	470/m.d.	18,800
Meals for hired labor	40 m.d.	100/m.d.	4,000
TOTAL			58,800

ANNEX VII

Table 6

Annual Expense Account (Program)

Item	Quantity	Unit Price ₡	Cost ₡
Cotton seed, 1 ha.	1 bucket	2,000/bucket	2,000
Fertilizer for traditional crops	5 50-kg. bags	2,500/bag	12,500
Insecticides for traditional crops	8 liters	1,250/liter	10,000
Repairs, traditional	-	-	1,500
Hired labor (for cotton)	40 m.d.	470/m.d.	18,800
Meals for hired labor	40 m.d.	100/m.d.	4,000
For bananas:[1]			
Family labor	119 m.d.	-	-[2]
Fertilizer	3 3/4 bags of 50 kg.	2,500/bag	9,375
Banana spade	1	500	500
TOTAL			58,675

1/ Inputs for banana taken from Table 8.

2/ All banana labor can be performed by family at no additional expense.

ANNEX VII

Table 7

Family Labor (Traditional and Program)

Item	Days	Implicit Rate ¢	Value ¢
On-farm labor:			
Husband	220	470	103,400
Wife (livestock)	50	400	20,000
Wife (sales)	150	400	60,000
TOTAL	420		183,400

Note: The husband handles the crops, the wife the animals and sale of products in the town market. Other family members do not work on the farm. There is no off-farm income.

ANNEX VII

Table 8

Current Account Summary

Account	Traditional	Program	Program effect: Absolute	Program effect: Relative
	¢	¢	¢	¢
Income (Tables 2(a) & (b))				
1. Sales	679,000	813,375		
2. Family consumption	186,100	186,100		
3. Total Income	865,100	999,475	134,375	16
Expenses				
4. Hired labor (Tables 3(a) and 3(b))[1/]	22,800	22,800		
5. Depreciation (Tables 1(a) and 1(b))	50,250	79,714		
6. Other expenses (Tables 3(a) and 3(b))	36,000	35,875		
7. Total expenses	109,050	138,389	29,339	25
Net Income				
8. Family farm income (lines 3-7)	756,050	861,086		
9. Off-farm income (Table 4)	-	-		
10. Family income (lines 8&9)	756,050	861,086	105,036	14

Note: Expenses do not include interest on production or marketing loans, if any, since farmer is not yet in production.

ANNEX VII

Table 9

Analysis of Annual Family Income

Item	Traditional ¢	Program ¢	Absolute ¢	Relative ¢
1. Family income (Table 5, line 10)	756,050	861,086	105,036	14
2. Family-labor-imputed income (Table 4, total)	183,400	183,400		
3. Entrepreneurial-imputed income (lines 1-2)	572,650	677,686	105,036	18
4. Investment, excl. land[1/] (Tables 1(a) and (b), totals)	325,000	393,358	68,358	21
5. Annual cost (Table 5, line 7 plus Table 6, line 2)	292,450	321,789	29,339	10
6. Gross income (Tables 2(a) and 2(b), total)	865,100	999,475	134,375	16
7. Per capita family income (line 1/9 persons in the type family)	84,006	95,676	11,670	14
8. Annual rate of return:				
a. On investment, excl. land (lines 3/4)	176%	172%	154%	-
b. On annual cost (lines 3/5)	196%	211%	358%	-
c. On gross income (lines 3/6)	66%	68%	78%	-

1/ The return on the land investment is excluded from this table. Data on land appreciation rate were not obtained on the type farm.

ANNEX VII

Table 10

Marginal Production Cost Per Bunch of Bananas

	Item	Amount ¢	
1.	Marginal farm cost (Table 6, line 5)	29,339	
2.	Marginal investment cost, ¢68,358 (Table 6, line 4) @ 18% interest	12,304	
3.	Decrease in income on lettuce, peppers and onions (Table 2(a) total - Table 2(b) total and Table 2(b) bananas)	100,000	
4.	Total marginal farm cost (lines 1, 2, and 3)	141,643	
5.	Banana production (Table 2(b))	625	bunches
6.	Marginal cost per bunch (lines 4/5)	227	
7.	Average sale price per bunch (Table 2(b))	375	
8.	Average marginal profit per bunch (line 7/6)	148	
9.	Ratio: Marginal profit on banana sales (lines 8/7)	39%	

TYPE FARM: BANANAS

Table 8 - Simulation Parameters For Current Account

Income and cost parameters were obtained mainly from a banana plot on the farm of Sr. Leguisamin, Nemby, which is a traditional banana-producing area. The plot consisted of 280 plants planted at the traditional spacing of 4x4 meters, equivalent to 0.448 hectares. Production practices, costs, and returns on this farm were checked with those in the Nemby-San Lorenzo area to adjust certain parameters to a type-farm average; the averaging was done specifically for yield, fertilization, and price. The other producers visited were Rivera family (25 ha.), Benito Arguello (1 ha.), Alonso family (½ ha.). None of the producers used pesticides, and there is considerable doubt that their use is economic, at least in the Asuncion area. Fertilizer was variable, mostly farm manure. Principal variety was Nanicao (a Giant Cavendish also called Montecristo). On the Kiscovich farm, the variety being planted is Misuri, one of the varieties recommended by the Minifundia Project. This fruit is not yet identified on the market. For the simulation in Table 2(b), the Oro price at Coronel Oviedo was applied. On the Leguisamin farm, the bunches were hauled from the farm to a road, for which a rented cart was used. The bananas were then cut into hands and sold to a buyer-trucker after loading into his crates. The cost of this work is included in the budget below. The sale price is for

farm-ripened product. However, in the simulation, the green price is used in view of the hauling distance from Coronel Oviedo.

Item	Quantity	Unit Price ¢	Amount Per .448 ha. ¢	Amount Per ha. ¢ [1/]
Sales (farm ripened)	560 bunches (280 plants)	600	336,000	749,280
Cost [2/]				
Labor:				
Weeding and other cultural practices, 100 plants require 2 m.d., 4 times per year	22 m.d.			
Harvesting, 40 bunches per m.d.	14 m.d.			
Hauling ½ m.d. per cartful of 20 bunches	14 m.d.			
Filling crates @ 20 bunches per 2 m.d.	56 m.d.			
Subtotal	106 m.d.	600	63,600	141,828
Ripening @ 20 bunches per m.d.	28 m.d.	600	16,800	37,464
Wagon rental @ 20 bunches per day	28 days	200	16,800	37,464
Fertilizer, 600 kg. per hectare in 5 of 8 years [3/]	3.36 bags of 50 kg.	2,500	8,400	18,732
Total Cost			105,600	235,488
Excess of income over costs			230,400	513,792

Footnotes: See next page.

FOOTNOTES

1/ Conversion factors 625/280 plants = 2.23

2/ For simulation purposes, land cost is not included.

3/ Fertilizer applied starting when yields start to decline, about the 4th year; plantation then lasts 8 years total.

ANNEX VII Table 11

PRODUCTION AND EXPORT OF PINEAPPLES AND BANANAS

PARAGUAY		1973*	1974*	1975*	1976*	1977*	1978*	1979*
Piña (Abacachí)	Total	35715,2	40427,0	41701,1	42535,1	43857,9	42165,9	44146,2
En Crecimiento		19703,3	20765,9	18864,3	17437,7	12101,9	11639,1	9237,7
En Producción		16011,9	19661,1	22836,8	25097,4	31756,0	30526,8	34908,5
Producción (Miles de Frutas)		12918,9	16076,3	12239,1	20891,4	28739,2	27614,8	33512,2
Piña (Cayena Lisa)	Total	7011,6	7527,2	7877,6	7928,1	8574,6	11318,6	14158,0
En Crecimiento		2819,9	3086,2	2611,8	2651,5	2750,3	3628,5	4247,4
En Producción		4191,5	4441,0	5265,8	5276,6	5824,3	7690,5	9910,6
Producción (Miles de Frutas)		3367,2	4061,0	3192,5	4856,4	5613,7	7410,2	9613,3
Banano Oro	Total	7167,5	8030,8	8830,8	9151,3	9225,9	9068,9	9069,2
En Crecimiento		3017,7	2720,5	2832,4	2652,4	2119,4	1995,0	1383,1
En Producción		4149,8	5310,3	5998,4	6498,8	7106,5	7073,9	7686,1
Producción (Miles de Cachos)		3399,8	4217,3	3222,7	5401,5	5085,4	4728,3	5754,6
Banano Carapé	Total	7877,4	9285,0	10475,7	11940,1	14197,3	14445,8	15238,7
En Crecimiento		2867,2	2699,2	3081,1	3323,1	3600,1	3420,5	2294,5
En Producción		5010,2	6585,8	7394,6	8617,0	10597,2	11025,3	12944,2
Producción (Miles de Cachos)		4144,3	5351,0	4350,9	7127,7	9432,9	9812,1	11622,0
Banano Otras Variedades	Total	193,8	242,8	267,5	275,2	405,4	535,2	711,1
En Crecimeinto		49,4	78,1	83,0	70,2	71,4	89,7	114,1
En Producción		144,4	164,7	184,5	205,0	334,0	445,5	597,0
Producción (Miles de Cachos)		122,8	146,7	95,0	182,8	307,8	423,1	567,2

* Encuesta Agropecuaria por Muestreo (1979), MAG, Repbulica del Paraguay

ANNEX VII Table 12

B A N A N A		P I Ñ A (F r e s c a)		P I Ñ A (P r e p a r a d a s)		
Volumen (Toneladas)	Valor (Miles de U$)	Volumen Toneladas)	Valor (Miles de U$)	Volumen Toneladas	Valor (Miles de U$)	
108	4	346	8	1.250	429	19
30	1	1.106	233	1.404	469	19
-	-	1.387	135	424	143	19
-	-	644	73	660	247	19
-	-	3.213	557	1.169	402	19
5	1	1.897	751	528	536	19
-	-	1.409	398	37	31	19
-	-	1.264	332	544	505	19
-	-	736	206	127	83	19
-	-	717	193	-	-	19

*desde Boletin Estadistoco Numero 260-IX-1980, Banco Nacional del Paraguay

ANNEX VIII

TYPE-FARM SIMULATION FOR STRAWBERRIES

At this time, the cooperative where the strawberry production is to be located has not yet been determined. An objective simulation will therefore have to wait until the specific farms that are to plant the crop have been selected. At that time, a type-farm management budget can be prepared for traditional farming and a simulation made utilizing parameters derived from existing strawberry farms, as shown in this report for tomatoes at the Quiindy Cooperative and bananas at the Cor. Oviedo Cooperative.

The parameters (i.e., income and costs) for small-scale strawberry production were obtained from a farm in Aregua that had an estimated 0.45 hectare strawberry plot. Table 1 shows the income-cost budget and Table 2 shows the investment and depreciation schedule. The following notes apply to this summary:

a. The producer spent all his working time on this single crop. He also had the help of two boys half a day each for most of the year.

b. Strawberry cropping starts in March and April with plowing (using rented oxen) and preparation of beds with a hoe. Land preparation with family labor required about 1½ months. Planting is at the rate of 1,000 plants per day. The producer

originally bought the plants, imported from Brazil. Current price is ₲3 each.

c. May and June is largely devoted to weeding and maintenance of beds (beds are about 60 cm. wide with 40 cm. aisles by 20 meters long and 270 plants per bed in 3 rows).

d. Harvesting extends from the end of June to the end of November. Piece-work labor is used to harvest, payment being at the rate of ₲20 per kg. loaded into baskets. The labor rate is equivalent to ₲600 per man-day (the same for men, women and children).

e. The crop is sold to merchant-truckers ("mercadero") who sell to intermediaries in the Asuncion market. The crop is hauled loose in the farmer's baskets, which are returned to him empty the following day. Baskets are woven wicker and hold 10-12 kg. each. The fruit is sold ungraded.

f. The first harvest at the end of June brought ₲300 per kg., but the price is expected to decline to a minimum of ₲100 later in the season. Average sale price is estimated at ₲160 per kg. The mark up from producer gate price to intermediary purchase price (trucker's margin) is about ₲100 per kg.

g. At the end of the harvest, starting in October and November, 12 beds are covered with coco-palm leaves on trestles about 1½

meters high for shade. The plants then produce stalons, used as seed for the next year's planting. To produce 30,000 plants, 12 beds are shaded (equivalent to 10 stalons per mother plant).

h. This producer has some limited insect damage to the flowers, but he does not spray for these or any other pests.

i. The variety used produces fruit measuring about 2.2 cm. in diameter by 3.5 cm. in length with a conical shape. The fruit is sold about 50 percent pink, so as not to be damaged in transport to Asuncion (about 30 km from Aregua).

j. The producer reported yields per plant of 450 grams, but this is in excess of average yield for the Central Zone producing area. In order to use the data from this farm for simulation purposes, an average yield of 110 grams was used. This is equivalent to 13,200 kg. per hectare, considered to be typical of the average commercial producer.

k. The net return (without allowances for farm overhead) from this study are:

Net Return/cost = ₲182,134/345,866 = 53%

Net Return/sales = $182,134/528,000 = 34%

Net Return/investment, excl. land = 182,134/49,300 = 369%

Net family farm income = ₲120,000 + 90,000 + 182,134 = 392,134

Table 1 - STRAWBERRIES: CURRENT ACCOUNT

TYPE FARM: Gregorio Galiano, Aregua
AREA: 0.25 hectare, including paths. Variety Florida Margarita.

Income	
Sales, 30,000 plants x 110g[1] = 3,300kg @ ₡160 (111 beds @ 270 plants per bed on 2,220 sq. meters)	₡528,000
Costs	
Family labor:	
Producer, 200 days @ ₡600	120,000
2 children, half-time = 150 days @ 600	90,000
Plowing, rental of oxen and plow	4,000
Fertilizer, 5 bags 12-12-17-2 (magnesium) of 50 kg @ ₡4,000 incl. delivery	20,000
Harvest, 3,300 kg. @ ₡20 (25-30 kg/m.d.)	66,000
Baskets, 17 @ ₡250 (Life: 1 year)	4,250
Shade (at end of year), 12 beds @ ₡2,500 (produces 10 new plants per seed plant)	30,000
Depreciation (see attached schedule)	11,666
Total cost (excluding overhead)	345,866
Excess of income over nominal cost	182,134

---

1) Producer reported 450 g. per plant = 32+/ha. Average yield per Bullard is 8+/ha. = 110 g. per plant, as shown above.

Table 2 - STRAWBERRIES: CAPITAL ACCOUNT

Item	Replacement Value ¢	Type Farm Investment Value ¢	Useful Life Years	Annual Depreciation ¢
Plants, 30,000 @ ¢3[2)]	90,000	45,000	10	9,000
Hoes, 2 @ ¢1,100	2,200	1,100	3	733
Shovels, 2 @ 2,000	4,000	2,000	3	1,333
Machetes, 4 @ 600	2,400	1,200	4	600
Subtotal	98,600	49,300		11,666
Land, ¼ ha.@1 million	250,000	250,000	-	-
Total	348,600	299,300		11,666

1) 1/2 of replacement value for depreciable items.

2) Plants originally imported from Brazil and then reproduced on the farm each year. Replacement for variety or other reasons expected in 10 years.

ANNEX IX

UNITED STATES STANDARDS

FOR GRADES OF

GROWERS' STOCK STRAWBERRIES FOR MANUFACTURE

EFFECTIVE JUNE 1, 1935

U.S. DEPARTMENT OF AGRICULTURE
AGRICULTURAL MARKETING SERVICE
WASHINGTON, D.C.

UNITED STATES STANDARDS FOR GRADES OF GROWERS' STOCK STRAWBERRIES FOR MANUFACTURE[1]

Effective June 1, 1935

Source: 32 F.R. 8879, June 22, 1967

AUTHORITY: The provisions of this subpart issued under secs. 203, 205, 60 Stat. 1087, as amended, 1090 as amended; 7 U.S.C. 1622, 1624.

GENERAL

§ 51.4415 General.

(a) These standards are intended for use only as a basis for determining the quality of strawberries as they are delivered by the growers to the manufacturing plant. The requirements of the standards are not applicable nor is it intended that they shall apply to strawberries which have been washed and graded for barreling or packaging for market.

(b) Buying and selling on the basis of uniform standards encourages better production and better handling methods. The practice of paying a flat price for all strawberries which are accepted discriminates against the best growers. The grower should be paid a suitable premium for strawberries which will make a high quality manufactured product. Likewise the grower should be penalized for the delivery of low quality berries.

(c) It should be understood at the outset that in the application of these standards the only sorting required of the grower is the removal of cull berries. The standards provide a basis for sampling lots as they are delivered by the growers.

(d) There are two methods suggested for applying the standards as a measure of quality of growers deliveries. The manufacturer may contract with growers to pay a certain price per pound according to the actual percentage of U.S. No. 1 berries delivered, or at a certain price per pound for strawberries of each grade with the respective tolerances. In the first method the contract would disregard all tolerances and also U.S. No. 2, U.S. No. 3, and U.S. No. 4 grades.

(e) To illustrate the first method of applying the standards, suppose the contract specifies that the manufacturer agrees to pay at the rate of 6 cents per pound according to the actual percentage of U.S. No. 1 berries delivered. The inspector takes a representative sample from a 300-pound lot of strawberries and finds that 93 percent of the berries, by weight, meet U.S. No. 1 requirements. Therefore, the lot would be settled for at the rate of 6 cents per pound for 93 percent of 300 pounds (279 pounds) or $16.74 for the 300-pound lot. Similarly a 300-pound lot having 85 percent of U.S. No. 1 berries would be settled for at the rate of 6 cents per pound for 85 percent of 300 pounds (255 pounds) or $15.30 for the 300-pound lot.

(f) To illustrate the second method, suppose the contract specified that the manufacturer agrees to pay 6 cents per pound for U.S. No. 1 berries, 5 cents per pound for U.S. No. 2 berries, 4½ cents per pound for U.S. No. 3 berries, and 4 cents per pound for U.S. No. 4 berries. The inspector takes a representative sample from a 300-pound lot of strawberries and finds that 96 percent of the berries, by weight, meet U.S. No. 1 requirements. Since a tolerance of 5 percent is allowed for this grade such a lot would grade U.S. No. 1 and would be paid for at the rate of 6 cents per pound. Therefore, the 300-pound lot would bring $18.

(g) If the inspector found the lot to contain 11 percent defective berries it would grade U.S. No. 3 and would be paid for at the rate of 4½ cents per pound. In this case the 300-pound lot would bring $13.50.

(h) The foregoing prices are used for illustrative purposes only.

(i) The application of these standards requires the services of private or official inspectors to determine and report the

[1] Packing of the product in conformity with the requirements of these standards shall not excuse failure to comply with the provisions of the Federal Food, Drug and Cosmetic Act.

ered to the factory. Such inspectors must be capable, efficient, and above all they must be absolutely neutral.

GRADES

§ 51.4416 U.S. No. 1.

"U.S. No. 1" consists of strawberries of one variety which are well colored, free from mold and decay and from soft, badly crushed or split, dried or undeveloped berries and from damage caused by dirt or other foreign matter, hail, sunscald, birds, disease, insects, mechanical or other means. Unless otherwise specified, the minimum size shall be not less than ⅝ inch in diameter and the caps shall be entirely removed.

(a) In order to allow for variations incident to proper handling, not more than 5 percent, by weight, of the strawberries in any lot may be below the requirements of this grade.

§ 51.4417 U.S. No. 2.

"U.S. No. 2" consists of strawberries which meet all the requirements of U.S. No. 1 grade except that a tolerance of 10 percent, by weight, of the strawberries in any lot shall be permitted for grade defects.

§ 51.4418 U.S. No. 3.

"U.S. No. 3" consists of strawberries which meet all the requirements of U.S. No. 1 grade except that a tolerance of 15 percent, by weight, of the strawberries in any lot shall be permitted for grade defects.

§ 51.4419 U.S. No. 4.

"U.S. No. 4" consists of strawberries which meet all the requirements of U.S. No. 1 grade except that a tolerance of 20 percent, by weight, of the strawberries in any lot shall be permitted for grade defects.

UNCLASSIFIED

§ 51.4420 Unclassified.

"Unclassified" consists of strawberries which do not meet the requirements of any of the foregoing grades.

DEFINITIONS

§ 51.4421 Well colored.

"Well colored" means that at least four-fifths of the surface of the berry is covered with red or pink color.

§ 51.4422 Soft.

"Soft" means that more than one-third of the volume of the whole berry is mushy or will be removed in the ordi-

§ 51.4423 Dried.

"Dried" means appreciably lacking in juice. Dried berries are excessively seedy and often shriveled.

§ 51.4424 Undeveloped.

"Undeveloped" means lack of development due to frost or insect injury, lack of pollination, or other means which causes the berry to be badly misshapen.

§ 51.4425 Damage.

"Damage" means any defect, or any combination of defects, which materially detracts from the appearance, or the edible quality of the berry for manufacturing purposes. A berry showing dirt which will not wash off in the ordinary process of washing shall be considered as damaged.

§ 51.4426 Diameter.

"Diameter" means the greatest dimension measured at right angles to a straight line running from the stem to the apex.

This is a reissue of U.S. Standards for Growers' Stock Strawberries for Manufacture which were effective June 1, 1935, formerly issued by the Agricultural Marketing Service. No substantive change is made in the text of the standards.

UNITED STATES STANDARDS

FOR GRADES OF

STRAWBERRIES

EFFECTIVE JULY 1, 1965

U.S. DEPARTMENT OF AGRICULTURE
FOOD SAFETY AND QUALITY SERVICE
WASHINGTON, D.C.

UNITED STATES STANDARDS FOR GRADES OF STRAWBERRIES [1]

SOURCE: 30 FR 6711, May 18, 1965, unless otherwise noted. Redesignated at 42 FR 32514, June 27, 1977.

Effective July 1, 1965

Sec.

AUTHORITY: The provisions of this subpart issued under secs. 203, 205, 60 Stat. 1087, as amended, 1090 as amended; 7 U.S.C. 1622, 1624.

GRADES

§ 2851.3115 U.S. No. 1.

"U.S. No. 1" consists of strawberries of one variety or similar varietal characteristics with the cap (calyx) attached, which are firm, not overripe or undeveloped, and which are free from mold or decay and free from damage caused by dirt, moisture, foreign matter, disease, insects, or mechanical or other means. Each strawberry has not less than three-fourths of its surface showing a pink or red color.

(a) *Size.* Unless otherwise specified, the minimum diameter of each strawberry is not less than three-fourths inch.

(b) *Tolerances.* In order to allow for variations incident to proper grading and handling the following tolerances, by volume, are provided as specified:

(1) *For defects.* Not more than 10 percent for strawberries in any lot which fail to meet the requirements of this grade, but not more than one-half of this tolerance, or 5 percent, shall be allowed for defects causing serious damage, including therein not more than two-fifths of this latter amount, or 2 percent, for strawberries affected by decay.

(2) *For off-size.* Not more than 5 percent for strawberries in any lot which are below the specified minimum size.

§ 2851.3116 U.S. Combination.

"U.S. Combination" consists of a combination of U.S. No. 1 and U.S. No. 2 strawberries, except for size: *Provided,* That at least 80 percent, by volume, of the strawberries meet the requirements of U.S. No. 1 grade.

(a) *Size.* Unless otherwise specified, the minimum diameter of each strawberry is not less than three-fourths inch.

(b) *Tolerances.* In order to allow for variations incident to proper grading and handling the following tolerances, by volume, are provided as specified:

(1) *For defects.* Not more than 10 percent for strawberries in any lot which are seriously damaged, including therein not more than one-fifth of this tolerance, or 2 percent, for strawberries affected by decay. No part of any tolerance shall be allowed to reduce for the lot as a whole, the percentage of U.S. No. 1 strawberries required in the combination, and individual containers (cups or baskets) may have not less than 65 percent U.S. No. 1 strawberries: *Provided,* That the entire lot averages within the required percentage.

(2) *For off-size.* Not more than 5 percent of the strawberries in any lot may be below the specified minimum size.

[1] Compliance with the provisions of these standards shall not excuse failure to comply with the provisions of the Federal Food, Drug and Cosmetic Act, or with applicable State laws and regulations.

§ 2851.3117 U.S. No. 2.

"U.S. No. 2" consists of strawberries which are free from decay and free from serious damage caused by dirt, disease, insects, mechanical or other means. Each strawberry has not less than one-half of its surface showing a pink or red color.

(a) *Size.* Unless otherwise specified, the minimum diameter of each strawberry is not less than five-eighths inch.

(b) *Tolerances.* In order to allow for variations incident to proper grading and handling the following tolerances, by volume, are provided as specified:

(1) *For defects.* Not more than 10 percent for strawberries in any lot which are seriously damaged, including therein not more than three-tenths of this tolerance, or 3 percent, for strawberries affected by decay.

(2) *For off-size.* Not more than 5 percent for strawberries in any lot which are below the specified minimum size.

UNCLASSIFIED

§ 2851.3118 Unclassified.

"Unclassified" consists of strawberries which have not been classified in accordance with any of the foregoing grades. The term "unclassified" is not a grade within the meaning of these standards but is provided as a designation to show that no grade has been applied to the lot.

APPLICATION OF TOLERANCES

§ 2851.3119 Application of tolerances.

(a) The contents of individual packages (cups or baskets) in the lot, based on sample inspection, are subject to the following limitations:

(1) For a tolerance of 10 percent or more, individual packages (cups or baskets) in any lot shall have not more than one and one-half times the tolerance specified, except that when the package contains 25 specimens or less, individual packages shall have not more than double the tolerance specified: *Provided,* That the averages for the entire lot are within the tolerances specified for the grade.

(2) For a tolerance of less than 10 percent, individual packages (cups or baskets) in any lot shall have not more than double the tolerance specified, except that at least one defective and one off-size specimen may be permitted in any package: *Provided,* That the averages for the entire lot are within the tolerances specified for the grade.

DEFINITIONS

§ 2851.3120 Overripe.

"Overripe" means dead ripe, becoming soft, a condition unfit for shipment and necessitating immediate consumption.

§ 2851.3121 Undeveloped.

"Undeveloped" means that the berry has not attained a normal shape and development due to frost injury, lack of pollination, insect injury, or other causes. "Butt. n" berries are the most common type of this condition.

§ 2851.3122 Damage.

"Damage" means any defect or any combination of defects, which materially detracts from the appearance, or the edible or shipping quality of the strawberries.

§ 2851.3123 Serious damage.

"Serious damage" means any specific defect described in this section; or an equally objectionable variation of any one of these defects, any other defect, or any combination of defects, which seriously detracts from the appearance, or the edible or shipping

UNITED STATES DEPARTMENT OF AGRICULTURE
Agricultural Marketing Service

U. S. STANDARDS FOR WASHED AND SORTED STRAWBERRIES FOR FREEZING 1/

(Effective June 1, 1935)

INTRODUCTION

These standards are intended for use only for strawberries which have been washed and sorted just prior to being placed in containers for freezing. Samples for the purpose of determining quality shall be taken immediately after washing and grading and before any other factory operations have taken place.

Offered as companion grades to the U. S. Standards for Growers' Stock Strawberries for Manufacture, the U. S. Standards for Washed and Sorted Strawberries for Freezing may be used at a grading station either alone or in conjunction with other grades.

There are several quality factors pertaining to frozen strawberries which may be most satisfactorily determined through inspection of samples of the fruit immediately after washing and grading. For this reason, the standards may be used to advantage as a basis for buying and selling of the finished product even though they are applied to the fruit before it is frozen, but obviously the standards do not apply to the finished product.

GRADES

U. S. No. 1 shall consist of strawberries of one variety which are properly washed, well colored, free from mold and decay, and from soft, badly crushed or split, dried or undeveloped berries and from damage caused by foreign matter, hail, sunscald, birds, disease, insects, mechanical or other means. Caps shall be entirely removed. Unless otherwise specified, the minimum size shall not be less than 5/8 inch in diameter.

1/ This is a reissue of U. S. Standards for Washed and Sorted Strawberries for Freezing, effective June 1, 1935, formerly issued by the Production and Marketing Administration. No change is made in the text of the standards.

Agriculture - Washington, D. C.

quality of the strawberries. The following specific defects shall be considered as serious damage:

(a) Soft berries;
(b) Badly deformed berries;
(c) Badly bruised berries;
(d) Decayed or leaky berries;
(e) Berries badly caked with dirt; and,
(f) Berries with less than one-half of surface showing pink or red color.

§ 2851.3124 Diameter.

"Diameter" means the greatest dimension measured at right angles to a straight line running from the stem to the apex.

Dated: May 12, 1965.

G. R. GRANGE,
Deputy Administrator,
Marketing Services.

[F.R. Doc. 65-5197; Filed, May 17, 1965; 8:46 a.m.]

In order to allow for variations incident to proper grading and handling, not more than 5 percent, by weight, of the strawberries in any lot may be below the requirements of this grade, provided that less than 1 percent shall be affected by mold or decay.

Unclassified shall consist of strawberries which do not meet the requirements of the foregoing grade.

DEFINITIONS OF TERMS

As used in these standards:

"Properly washed" means that the berries have been washed with fresh, clean water so as to remove all soil, dirt or other foreign matter which may be detected by the taste or naked eye.

"Well colored" means that at least four-fifths of the surface of the berry is covered with red or pink color.

"Soft" means that more than one-third of the volume of the whole berry is mushy or has been removed by washing. Berries showing moist surface bruises from the recent handling in washing and sorting shall not be considered as soft.

"Dried" means appreciably lacking in juice. Dried berries are excessively seedy and often shriveled.

"Undeveloped" means lack of development due to frost or insect injury, lack of pollination or other means which causes the berry to be badly misshapen.

"Damage" means any injury or defect which materially affects the appearance or edible quality of the berry for manufacturing purposes.

"Diameter" means the greatest dimension measured at right angles to a straight line running from the stem to the apex.

Issued May 25, 1935
Reissued September 2, 1955

Roger Lee Newton

Deputy Administrator, Marketing Services
Agricultural Marketing Services

ANNEX X

BACKGROUND ON PINEAPPLE MARKETING

(This section was written by Gregory Wyman, Peace Corps Volunteer, assigned to the Commercialization Department, CREDICOOP)

"The principal variety of pineapple grown in Paraguay is the Abacachi (also written Abacaxi, and Avacachi), which was introduced from Brazil sometime before 1900. The Abacachi apparently has been the favorite of producers in Paraguay since then, and currently constitutes (2/3) of the pineapple grown in Paraguay."

"The Abacachi fruit is characteristically elongated and tapered, averaging 16.3 cm in height, 9.5 cm in diameter at the bases, and 8.10 cm at the apex. The fruit size is relatively small, averaging about 900 gm. each, and has a relatively small core."

"The tapered fruit of the Abacachi variety, together with its small size, make it relatively unsatisfactory for processing. Also, since the Buenos Aires fresh market prefers large fruit, preferably over 1,000 grams, difficulty is often encountered in obtaining sufficient volume of fruit suitable for export. Reportedly only 10-12 percent of production is of export size."

"Increasing acreage of the Smooth Cayenne variety (Cayenne Lisa) is being planted, and this variety reportedly constitutes most of the pineapple production other than the Abacachi. The Smooth Cayenne

fruits average somewhat larger than the Abacachi, and are more nearly cylindrical shaped, both of which characteristics make it more acceptable for processing as well as more easily meeting size requirements of the Argentine export market."

"The harvest season for pineapple in Paraguay begins in November and extends into March. Generally the flowering of all pineapple plants does not occur simultaneously. Without treatment and even with treatment flowering may occur over a period of 2 or 3 months. A somewhat greater degree of uniformity in flowering can be achieved by treatment with Carbide water, naphthalenic acid, or hormones, but this is not yet practiced by Paraguayan producers."

"Growers in the Concepcion area experience two more or less distinct flowering periods: one resulting in fruits reaching maturity about November 15, and a second giving a crop about January 15."

"Normally, the flowers occur after the short, cool days of winter. In Paraguay, fruits of the Abacachi variety mature about 22 weeks earlier."

"The harvest season for Paraguayan pineapple begins and ends a month or more after pineapple harvest in Brazil, which begins in September and continues through January. Harvest of any pineapple produced in Argentina necessarily would coincide with that in Paraguay, because the producing areas are at the same latitude as

those in Paraguay. The winter temperatures are too low for pineapple production except in the extreme northern areas of Argentina."[1)]

Pineapple production takes place mostly in the Departments of Central, Cordillera, Paraguari, and Concepcion.

Pineapple marketing in Paraguay has certain aspects that are similar to that of the banana and the tomato, in that there are informal grading classifications which are observed by the fruit merchants in the market. This information was also obtained during the previously mentioned in formal interviews with random wholesalers and retailers in the Market No. 4 (See Annex A9 for illustration).

The Cayenne Lisa variety is sold by the farmer to the "acopiador" in pairs (yunta) at a price of ₲60-80, who in turn sells to a wholesaler in the Market No. 4 at ₲65-85 a pair. The wholesaler now sells to the retailer at ₲100-120 a pair, which he sells to the consumer at the following prices: ₲150 for smallpairs, ₲175 for medium pairs, and ₲200 for large size pairs.

The Abacachi or Criolla variety receives lower prices than the Cayenne Lisa when sold by the farmer to the "acopiador;" only

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1) "Marketing of Paraguayan Pineapple," (Nov.-Dec. 1972) by Robin G. Henning, Agricultural Economist (Marketing) for USAID/USDA.

₲30-40 a pair. The "acopiador" again will sell to a wholesaler in Market No. 4 but at ₲35-45, who sells to the retailer at ₲45 to 55 a pair. The retailer's prices to the consumer are as follows: ₲60 for small pairs, ₲70 for medium pairs, and ₲100 for large pairs.

Price data for pineapple from the Informativo Sobre Mercadeo from the MAG is very scarce and what little there is suggest that there is a high demand towards the Christmas holiday period. The monthly wholesale price data for the market in Buenos Aires also supports this theory (see Annex C1). Because of Paraguayan Decreto No. 15.144, the MAG has total regulatory control over pineapple exportation, including packaging, handling, and official harvest dates, which are set for each Department separately according to their production progress. Harvesting is only for about 10 days, usually from November 25 to December 5, and due to demand in the Buenos Aires market, which drops rapidly after December 20, it leaves a period of 5 to 10 days to transport it to Buenos Aires and sell it in the market.

At the moment, CREDICOOP does not market pineapple for any of its cooperatives but had planned to export to Buenos Aires with the Minifundia production. To do this, it will have to plan its marketing around this previously mentioned law.

Production statistics reported on both the Abacachi and the Smooth Cayenne appear reliable enough to use as source material. As can be seen in Annex B1 and B2, the Abacachi production appears to

overshadow the Smooth Cayenne production by 3 to 1 in 1979, although this is an important point because in 1973 it was almost 4 to 1. The Abacachi is losing ground to the Smooth Cayenne and this trend shows no sign of slowing.

ANNEX XI

UNITED STATES STANDARDS FOR GRADES OF PINEAPPLES

EFFECTIVE FEBRUARY 23, 1953

U.S. DEPARTMENT OF AGRICULTURE
FOOD SAFETY AND QUALITY SERVICE
WASHINGTON, D.C.

UNITED STATES STANDARDS FOR GRADES OF PINEAPPLES [1]

SOURCE: 18 FR 7127, Nov. 11, 1953, unless otherwise noted. Redesignated at 42 FR 32514, June 27, 1977.

Effective February 23, 1953

Sec.

AUTHORITY: The provisions of this subpart issued under secs. 203, 205, 60 Stat. 1087, as amended, 1090 as amended; 7 U.S.C. 1622, 1624.

GRADES

§ 2851.1485 U.S. Fancy.

U.S. Fancy consists of pineapples of similar varietal characteristics, which are mature, firm, dry and well formed, which have well developed eyes, and which are free from decay and sunscald, and free from injury caused by bruising, sunburn, and gummosis, and free from damage caused by disease, insects, rodents or mechanical or other means. The butts shall be well trimmed, well cured, and free from damage caused by cracks. The tops shall be of characteristic color, single, straight, well attached to the fruit and free from crown slips. The length of the tops shall be not less than 5 inches nor more than 1½ times the length of the fruit. (See § 2851.1490.)

(a) In order to allow for variations incident to proper grading and handling, other than for size and marking, not more than a total of 10 percent, by count, of the pineapples in any lot may fail to meet the requirements of the grade: *Provided*, That not more than one-half of this amount, or 5 percent, shall be allowed for pineapples which are seriously damaged, including therein not more than 1 percent for pineapples affected by decay.

§ 2851.1486 U.S. No. 1.

U.S. No. 1 consists of pineapples of similar varietal characteristics, which are mature, firm, dry and well formed, which have well developed eyes, and which are free from decay and sunscald, and free from damage caused by bruising, sunburn, gummosis, disease, insects, rodents or mechanical or other means. The butts shall be well trimmed, fairly well cured and shall not be badly cracked. The tops shall be of characteristic color, single, reasonably straight, well attached to the fruit, and shall have not more than 5 crown slips, not more than 2 of which may be more than 2¾ inches in length. The length of the tops shall be not less than 4 inches nor more than twice the length of the fruit. (See § 2851.1490.)

(a) In order to allow for variations incident to proper grading and handling, other than for size and marking, not more than a total of 10 percent, by count, of the pineapples in any lot may fail to meet the requirements of the grade: *Provided*, That not more than one-half of this amount, or 5 percent, shall be allowed for pineapples which are seriously damaged, including therein not more than 1 percent for pineapples affected by decay.

§ 2851.1487 U.S. No. 2.

U.S. No. 2 consists of pineapples of similar varietal characteristics, which are mature, firm, and fairly well formed, which have fairly well developed eyes, and which are free from decay and sunscald, and free from serious damage caused by bruising, sunburn, gummosis, disease, insects, rodents or mechanical or other means. The butts shall be fairly well cured. The tops shall be of characteristic color, well attached to the fruit, not completely curved over and shall consist of not more than 2 fairly well developed stems but may have any number of crown slips. (See § 2851.1490.)

(a) In order to allow for variations incident to proper grading and handling, other than for size and marking, not more than a total of 10 percent, by count, of the pineapples in any lot may fail to meet the requirements of the grade: *Provided*, That not more than one-tenth of this amount, or 1 percent, shall be allowed for pineapples affected by decay.

UNCLASSIFIED

§ 2851.1488 Unclassified.

Unclassified consists of pineapples which have not been classified in accordance with any of the foregoing grades. The term "unclassified" is not a grade within the meaning of these standards but is provided as a designation to show that no definite grade has been applied to the lot.

APPLICATION OF TOLERANCES

§ 2851.1489 Application of tolerances.

(a) The contents of individual packages in the lot, based on sample inspection, are subject to the following limitations: *Provided*, That the averages for the entire lot are within the tolerances specified for the grade.

(1) For a tolerance of 10 percent or more, individual packages in any lot may contain not more than one and one-half times the tolerance specified.

(2) For a tolerance of less than 10 percent, individual packages in any lot may contain not more than double the tolerance specified, except that at least one decayed or otherwise defective fruit may be permitted in any package.

SIZE AND MARKING REQUIREMENTS

§ 2851.1490 Size and marking requirements.

(a) The pineapples in each container shall be fairly uniform in size and the count shall be plainly stamped, stenciled or otherwise marked on the container.

(b) In order to allow for variations incident to proper packing not more than 5 percent of the packages in any lot may fail to meet the requirements pertaining to size and marking.

DEFINITIONS

§ 2851.1491 Similar varietal characteristics.

"Similar varietal characteristics" means that the pineapples in any lot are similar in type and character of growth.

§ 2851.1492 Mature.

"Mature" means that the pineapple has reached the stage of development which will insure a proper completion of the ripening process.

§ 2851.1493 Firm.

"Firm" means that the fruit does not yield to slight pressure.

§ 2851.1494 Dry.

"Dry" means that the surface of the fruit is free from moisture other than that resulting from condensation.

[1] Compliance with the provisions of these standards shall not excuse failure to comply with the provisions of the Federal Food, Drug and Cosmetic Act, or with applicable State laws and regulations.

§ 2851.1495 Well formed.

"Well formed" means that the fruit shows good shoulder development and is not lopsided or distinctly pointed, and that the sides are not noticeably flattened.

§ 2851.1496 Well-developed eyes.

"Well-developed eyes" means eyes which have developed normally.

§ 2851.1497 Injury.

"Injury" means any defect which more than slightly affects the appearance or the edible or shipping quality of the fruit. Sunburn which will not more than slightly affect the appearance of the fruit when ripe, or gummosis which is very slight shall not be considered as injury.

§ 2851.1498 Damage.

"Damage" means any defect which materially affects the appearance, or the edible or shipping quality of the fruit. Sunburn which will not materially affect the appearance of the fruit when ripe, or gummosis which is slight or does not materially discolor the eyes shall not be considered as damage.

§ 2851.1499 Well trimmed.

"Well trimmed" means that the bracts on the stem next to the base of the fruit have been removed and the stem has been cut off so that the fruit will stand straight when placed butt end down on a flat surface.

§ 2851.1500 Well cured.

"Well cured" means that the cut portion of the butt has completely calloused over.

§ 2851.1501 Characteristic color.

"Characteristic color" means that at shipping points the tops are of good green color characteristic of well-grown pineapples, and in the receiving markets, are fairly good green color and relatively free from dryness and discoloration.

§ 2851.1502 Single top.

"Single top" means that the fruit does not have more than one prominent main stem at the crown of the fruit.

§ 2851.1503 Crown slips.

"Crown slips" means the small, secondary top growths at the crown of the fruit.

§ 2851.1504 Fairly well cured.

"Fairly well cured" means that the cut portion of the butt is free from bleeding.

§ 2851.1505 Fairly well formed.

"Fairly well formed" means that the fruit is not excessively lopsided or excessively flattened at the shoulders or sides.

§ 2851.1506 Fairly well-developed eyes.

"Fairly well-developed eyes" means eyes which show fairly normal development and are not badly misshapen.

§ 2851.1507 Serious damage.

"Serious damage" means any defect which seriously affects the appearance, or the edible or shipping quality of the fruit.

§ 2851.1508 Fairly uniform in size.

"Fairly uniform in size" means that for counts 18 or less in standard southeastern pineapple crates, the pineapples do not vary more than ⅝ inch in diameter, and for counts over 18 in number the pineapples do not vary more than ½ inch in diameter. Diameter shall be the greatest dimension measured at right angles to a line from top to butt.

ANNEX XII
Selected Articles on Tomato Marketing &
Strawberry processing

T5/5/1-12

/5/1
1515759 HD9235.T62C4 ID No: 78-9699478 Book Cit: 78013802
Guia para la exportacion de productos agricolas no tradicionales :; omate / Instituto Centroamericano de Investigacion y Tecnologia ndustrial. --; Guide to the exportation of non-traditional agricultural roducts; the tomato.
Instituto Centroamericano de Investigacion y Tecnologia In; Dustrial.
Guatemala : ICAITI; 81; 57 p. : ill. 1976.
HD9235.T62C4
78013802
Languages: SPA
Note: Presented to the Oficina Regional para los Programas de entroamerica in completion of contract No. 596-11-260-033.2 Pro Ag 75-5. ncludes bibliographical references.
Search: 19760000
Doc Type: MONOGRAPH Location: DCB
Cat Codes: 1020; 2030
Descriptors: Tomatoes; Central America; Marketing.

/5/2
1282848 8 C762 ID No: 77-9076777
Reglamento para regular laoferta de tomate fresco al mercado nacional; emporada 1976-1977; Ordinance for regulating the supply of fresh tomatoes n the national market in the 1976-1977 season .Mexico.
Anal Situac Agric Sinaloa Confed Asoc Agric Estado Sinaloa Dep Estud Econ stad 14 (102): 237-253. July/Aug 1976
8 C762
Languages: SPA
Search: 19760800
Doc Type: ARTICLE
Cat Codes: 1020
Descriptors: Mexico

/5/3
1282847 8 C762 ID No: 77-9076776
Reglamento para la siembra y comercializacion de tomate; pepino; chille ell y berenjena; temporada 1976-1977; Regulation for sowing and marketing omatoes; cucumbers; redpeppers and eggplants in the 1976-1977 season Supply and demand; Mexico.
Anal Situac Agric Sinaloa Confed Asoc Agric Estado Sinaloa Dep Estud Econ stad 14 (102): 219-235. July/Aug 1976
8 C762
Languages: SPA
Search: 19760800
Doc Type: ARTICLE
Cat Codes: 1020
Descriptors: Mexico

/5/4
1194315 9.4 R32 ID No: 76-9122746
Colombia produce 190.000 toneladas de tomate; Colombia produces 190,000 ons of tomatoes .Statistics.
Rev Nac Agric 68 (819): 4-6. Sept 30, 1975
9.4 R32
Languages: SPA
Search: 19750930
Doc Type: ARTICLE
Cat Codes: 1020
Descriptors: Colombia

5/5/5

1181888 8 C762 ID No: 76-9111711

MEMORANDUM 3. REVISON DE LA PROGRAMACION AJUSTADA DE SIEMBRAS DE TOMATE Y SU AVANCE DE PRODUCCION EXPORTADA; TEMPORADA 1975-76; MEMORANDUM 3. REVISION OF THE ADJUSTED PROGRAM FOR SOWING TOMATOES AND ITS ADVANCE OF EXPORTED PRODUCTION IN THE PERIOD 1975-76 .MEXICO.

ANAL SITUAC AGRIC SINALOA CONFED ASOC AGRIC ESTADO SINALOA DEP ESTUD ECON ESTAD 13 (97): 300-311. SEPT/OCT 1975

8 C762

LANGUAGES: SPA

SEARCH: 19751000

DOC TYPE: ARTICLE

CAT CODES: 1020

DESCRIPTORS: MEXICO

5/5/6

1181887 8 C762 ID No: 76-9111710

MEMORANDUM 2. AJUSTE DE LA PROGRAMACION DE SIEMBRAS DE TOMATE; TEPORADA 1975-1976; MEMORANDUM 2. ADJUSTMENT OF PROGRAM FOR SOWING TOMATOES IN THE PERIOD 1975-1976 .MEXICO; OPTIMUM DATES OF EXPORTS.

ANPL SITUAC AGRIC SINALOA CONFED ASOC AGRIC ESTADO SINALOA DEP ESTUD ECON ESTAD 13 (97): 289-299. SEPT/OCT 1975

8 C762

LANGUAGES: SPA

SEARCH: 19751000

DOC TYPE: ARTICLE

CAT CODES: 1020

DESCRIPTORS: MEXICO

5/5/7

1181886 8 C762 ID No: 76-9111709

MEMORANDUM 1. PROGRAMACION DE SIEMBRAS PAR TOMATE; CICLO HORTICOLA 1975-1976; MEMORANDUM 1. PROGRAM FOR SOWING TOMATOES IN THE HORTICULTURAL YEAR 1975-1976 .MEXICO; OPTIMUM DEMAND OF UNITED STATES AND CANADIAN MARKETS.

ANAL SITUAC AGRIC SINALOA CONFED ASOC AGRIC ESTADO SINALOA DEP ESTUD ECON ESTAD 13 (97): 280-288. SEPT/OCT 1975

8 C762

LANGUAGES: SPA

SEARCH: 19751000

DOC TYPE: ARTICLE

CAT CODES: 1020

DESCRIPTORS: MEXICO

5/5/8

1181885 8 C762 ID No: 76-9111708

REGLAMENTO PARA LA SIEMBRA Y COMERCIALIZACION DE TOMATE; PEPINO; CHILE BELL Y BERENJENA; TEMPORADA 1975-1976; REGULATION FOR THE SOWING AND COMMERCIALIZATION OF TOMATOES; CUCUMBERS; REDPEPPERS AND EGGPLANTS .SUPPLY AND DEMAND; EXPORTS; STANDARDIZATION; MEXICO.

ANAL SITUAC AGRIC SINALOA CONFED ASOC AGRIC ESTADO SINALOA DEP ESTUD ECON ESTAD 13 (97): 263-279. SEPT/OCT 1975

8 C762

LANGUAGES: SPA

SEARCH: 19751000

DOC TYPE: ARTICLE

CAT CODES: 1020

DESCRIPTORS: MEXICO

5/5/9

1001714 8 C762 ID No: 75-9078522

REGLAMENTO PARA LA SIEMBRA DE TOMATE CON FINES DE EXPORTACION Y MECANISMO PARA LA EXPORTACION DE TOMATE; PEPINO Y CHILE BELL; TEMPORADA 1974-1975; REGULATION FOR SOWING TOMATOES FOR EXPORTATION; AND MECHANISM FOR EXPORTING TOMATOES; CUCUMBERS AND BELL CHILI .MEXICO.

ANAL SITUACION AGRIC SINALOA 13 (93): 34-47. JAN/FEB 1975

8 C762

EGULATION FOR SOWING TOMATOES FOR EXPORTATION; AND MECHANISM FOR EXPORTING
OMATOES; CUCUMBERS AND BELL CHILI .MEXICO.
ANAL SITUACION AGRIC SINALOA 13 (93): 34-47. JAN/FEB 1975
8 C762
LANGUAGES: SPA
SEARCH: 19750200
DOC TYPE: ARTICLE
CAT CODES: 1020
DESCRIPTORS: MEXICO

/5/10
945577 8 C762 ID No: 75-9027691
UN MODELO ECONOMETRICO PARA LA AGRICULTURA: "EL CASO DEL TOMATE PARA
XPORTACION DE SINALOA"; AN ECONOMETRIC MODEL FOR AGRICULTURE: THE CASE OF
HE TOMATO FOR EXPORT FROM SINALOA
MENDOZA, J A
ANAL SITUACION AGRIC SINALOA 12 (91): 591-628. SEPT/OCT 1974
8 C762
LANGUAGES: SPA
SEARCH: 19741000
DOC TYPE: ARTICLE
CAT CODES: 1020
DESCRIPTORS: MEXICO

/5/11
670731 8 C762 ID No: 73-9127596
SITUACION Y CARACTERISTICAS DEL MERCADO DE TOMATE EN LA CIUDAD DE
ULIACAN; SITUATION AND CHARACTERISTICS OF TOMATO MARKET IN CULIACAN CITY
MELENDREZ O, J R
CONFED ASOC AGR ESTAD SINALOA ANAL SITUACION AGR SINALOA 10 (78):
08-239. JULY/AUG 1972
8 C762
LANGUAGES: SPA
SEARCH: 19720800
DOC TYPE: ARTICLE
CAT CODES: 1020

/5/12
636326 8 C762 ID No: 72-9110075
ESTUDIO DE LA INDUSTRIA DEL TOMATE EN EL ESTADO DE SINALOA. ALGUNOS DE
OS FACTORES CALCULADOS COMO IMPORTANTES PARA LA CREACION DE UN MERCADO
ARA ESTE PRODUCTO EN EUROPA; A STUDY OF TOMATO INDUSTRY IN SINALOA; SOME
MPORTANT FACTORS FOR CONSIDERATION IN CREATING TOMATO MARKET IN EUROPE
MILNE, K
CONFED ASOC AGR ESTAD SINALOA ANAL SITUACION AGR SINALOA 10 (77):
55-168. MAY/JUNE 1972
8 C762
LANGUAGES: SPA
SEARCH: 19720600
DOC TYPE: ARTICLE
CAT CODES: 1020

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15JUL81 9:28:20 USER1032
$5.82 0.194 HRS FILE110 3 DESCRIPTORS

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81108901 81009861 Holding Library: AGL

(13) Tomato supply aspects in Brazil (Commercialization, consumption).
Aspectos do abastecimento do tomate no Brasil
Bortoleto, E.E.; Ueno, L.H.
Sao Paulo, Brazil, . O Instituto.
Informacoes economicas - Instituto de Economia Agricola. v. 10 (1) , Jan 1980. p. 35-40.
NAL: HD1871.A4
Languages: FRENCH (?)
Geographic Location: Brazil
Subfile: OTHER FOREIGN;
Document Type: ARTICLE
Section Headings: DISTRIBUTION AND MARKETING(E700)

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81104457 81005413 Holding Library: AGL
Harvesting, classification, packaging and commercialization (of tomatoes, Brazil).
Colheita, classificacao, embalagem e comercializacao
Makishima, N.;
Belo Horizonte, , A Empresa.
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NAL: HD1875.M5E5
Languages: ENGLISH
Geographic Location: Brazil
Subfile: OTHER FOREIGN;
Document Type: ARTICLE
Section Headings: PLANT PRODUCTION-HORTICULTURAL CROPS(F110); FOOD PACKAGING-HORTICULTURAL CROP PRODUCTS(0305); DISTRIBUTION AND MARKETING(E700)

10/5/4

81104447 81005403 Holding Library: AGL
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Giudice, M.C. del.;
Belo Horizonte, , A Empresa.
Informe agropecuario - Empresa de Pesquisa Agropecuaria de Minas Gerais. v. 6 (66) , June 1980. p. 3-7. ill.
NAL: HD1875.M5E5
Languages: ENGLISH (?)
9 ref.
Geographic Location: Brazil
Subfile: OTHER FOREIGN;
Document Type: ARTICLE
Section Headings: ECONOMICS-GENERAL(E100); DISTRIBUTION AND MARKETING(E700)

Strawberry processing

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T5/5/2;T5/5/6-9;T5/5/12-13
2T5/5/2
INVALID ARGUMENT

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80134240 80047751 HOLDING LIBRARY: AGL
CULTIVATION OF THE STRAWBERRY.
EL CULTIVO DE LA FRESA
MEXICO, D.F., , (S.N.).
TIERRA. V. 34 (4) , APR 1979. P. 162-165, 172-173.
ISSN 0040-733X:
NAL: 8 T445
LANGUAGES: SPANISH
SUBFILE: OTHER USDA;
DOCUMENT TYPE: ARTICLE
SECTION HEADINGS: PLANT PRODUCTION-HORTICULTURAL CROPS(F110)

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0001838 80022004 HOLDING LIBRARY: AGL
MERISTEM CULTURE OF FRAGARIA (STRAWBERRY) SPP. IN VITRO (TO OBTAIN
IRUS-FREE PLANTS, MEXICO)
CULTIVO MERISTEMATICO DE FRAGARIA SPP. "IN VITRO"
VILLALOBOS ARAMBULA, V.M.; ORTEGA OBREGON, C.A.
CHAPINGO, MEXICO, , LA ESCUELA.
CHAPINGO.ESCUELA NACIONAL DE AGRICULTURA. MAR/APR 1978. (10) , MAR/APR
978. P. 21-25. ILL.
NAL: 102 C36
LANGUAGES: SPANISH
22 REF
GEOGRAPHIC LOCATION: MEXICO
DOCUMENT TYPE: ARTICLE
SECTION HEADINGS: PLANT VIRUS DISEASES AND CONTROL(4515)

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116913 79101574 HOLDING LIBRARY: AGL
STRAWBERRIES. II. (CULTIVATION TECHNIQUES, PESTS AND DISEASES)
FRESON. II
MAROTO, J.V.;
MADRID, , EDITORIAL AGRICOLA ESPANOLA.
AGRICULTURA. V. 48 (565) , MAY 1979. P. 380-386. ILL.
ISSN 0002-1334:
NAL: 15 AG84
LANGUAGES: SPANISH
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Document Type: ARTICLE
Section Headings: HORTICULTURAL CROPS, CULTURE(4055); MISCELLANEOUS PLANT DISEASES, INJURIES AND CONTROL(4520)

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79116904 79101565 Holding Library: AGL
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Freson. I. Su cultivo en el litoral mediterraneo espanol, tecnologia actual
Maroto, J.V.;
Madrid, , Editorial Agricola Espanola.
Agricultura. v. 48 (564) , Apr 1979. p. 290-296.. ill.
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Geographic Location: Spain
Document Type: ARTICLE
Section Headings: HORTICULTURAL CROPS, CULTURE(4055)

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La Comercializacion de la fresa fresca en el mercado nacional. -
Mexico, D.F. , La Comision , 1973 MEXICO
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Subfile: USDA .(US DEPT. AGR);
Government Source: FEDERAL
Document Type: MONOGRAPH
Section Headings: AGRICULTURAL PRODUCTION DISTRIBUTION (FARM PRODUCTS) / AGRICULTURAL POLICIES AND PROGRAMS(1020); HORTICULTURAL PRODUCTS(2030)

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Mexico, D.F. , La Comision , 1974 MEXICO
93 p. : col. ill., map. --
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NAL: SB354.M4 No.20
Languages: SPANISH
Subfile: USDA .(US DEPT. AGR);
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Document Type: MONOGRAPH
Section Headings: HORTICULTURAL PRODUCTS(2030)

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t10/5/2-4

T6/5/8; T6/5/29; T6/5/39
5/5/8
1397321 TP368.C4 ID No: 78-9041923
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PASCHOALINO, J E
BOL INST TECNOL ALIMENT 51: 113-124. ENG. SUM. MAY/JUNE 1977
TP368.C4
LANGUAGES: POR
SEARCH: 19770600
DOC TYPE: ARTICLE, REVIEW
CAT CODES: 2030

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LANGUAGES: SPA
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DOC TYPE: ARTICLE
CAT CODES: 2030

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902776 81 AM325 ID No: 74-9097296
ENSAYOS SOBRE LA CONSERVACION DE FRESAS; TESTS ON THE PRESERVATION OF STRAWBERRIES
GONZALEZ, J
PROC TROP REG AM SOC HORTIC SCI 17: 285-289. 1973
81 AM325
LANGUAGES: SPA
SEARCH: 19730000
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SCIENCE AND EDUCATION ADMINISTRATION

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Requests for the services described above should be sent to: U.S. Department of Agriculture, National Agricultural Library Building, ILL/Photoduplication Section, Beltsville, Maryland 20705. Questions concerning these services should be directed to the attention of the Chief, Lending Division.

ANNEX XIII

NO. 1

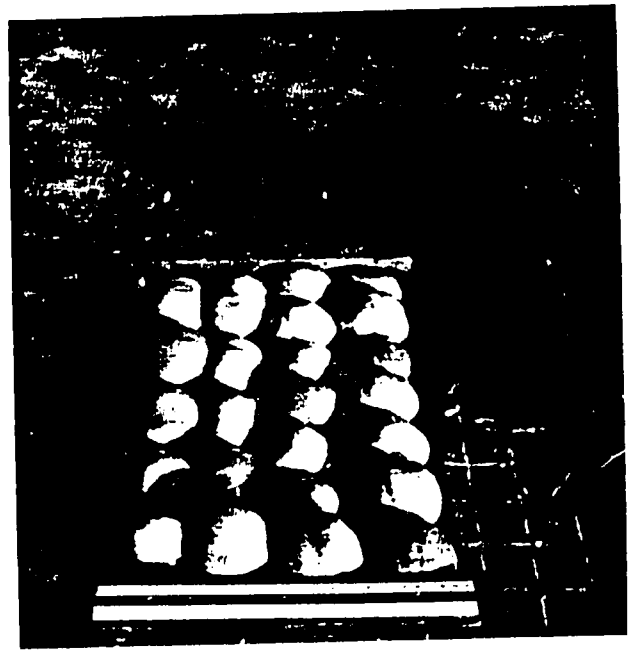
TOMATOES

No. 1. TOMATOES: Excellent pack of "Primera Colorada" grade. Note the uniformity in ripeness, size, and freedom from defects. The fruits were packed by a farmer cooperative of Japanese farmers in crates owned by the commission wholesaler. The product is sold in this condition to supermarkets, retailers and intermediaries, the crates being returned to the wholesaler. Net contents average 18 kg. The ruler in the foreground measures 30 cm. Mercado 4, Asuncion.

ANNEX XIII

NO. 2

TOMATOES

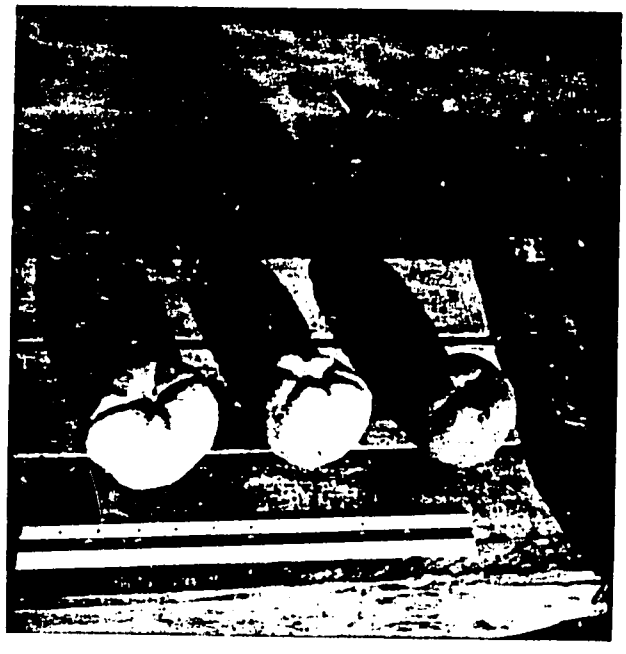


No. 2. TOMATOES: An inferior pack compared with photo No. 1. Note variation in ripeness from green to red and the inclusion of all three sizes: Cero (small), Primera (firsts) and extra. Mercado 4, Asuncion.

ANNEX XIII

NO. 3

TOMATOES - GRADES



No. 3. TOMATOES - GRADES: From left to right: Verde (Green), Pintada (Tinged), and Colorada (Red). The Pintada color brings a slightly higher price than the Coloradas in the Buenos Aires wholesale market, the Verdes a considerably lower price. These fruits show a tendency toward "Floron," or uneven locule development, and undesirable trait found in certain varieties. The ruler in the foreground measures 30 cm. long. Mercado 4, Asuncion.

ANNEX XIII

NO. 4

BANANAS

No. 4. BANANAS: Carape variety, ripened and crated. Crates, measuring 50 cm. long by 35 cm. wide by 30 cm. high, hold about 14 dozen fruit. For this variety, the hands are usually cut on the farm and delivered green in the crates. The crates are ripened by the Asuncion dealer, using ethylene gas in sealed chambers, then sold without recrating to retailers, supermarkets and intermediaries. The crates are returned to the farm buyer ("acopiadores"). The smaller and more fragile Oro variety is brought to Asuncion in whole bunches, cut by the wholesaler and ripened either with gas in sealed chambers or in covered tightly-packed piles. Mercado 4, Asuncion.

NO. 5

BANANAS

No. 5. BANANAS: Typical display in the public market of a dealer who buys from both farmers and truckers, and who sells to intermediaries and retailers. The crate in the lower right is the Nanicao variety; this is 1st grade fruit, having relatively large size (about 16 cm. long) and few blemishes. The basket contains the Oro variety; the fruit is fragile and shorter (about 10 cm. long). The table in the background is piled with severely discolored Carape bananas. Carapes usually run about 15 cm. long, but those in the photo are somewhat smaller (13 cm). Mercado 4, Asuncion.

NO. 6

BANANAS

No. 6. BANANAS: 1st grade bananas identified in the market as Carape variety. Relatively free of blemishes. The ruler measures 30 cm. long. Mercado 4, Asuncion.

NO. 7

BANANAS

No. 7. BANANAS: The field harvesting crate for Carape bananas, shown here, is used throughout the marketing channel all the way to the retailer. The crates are usually the property of the farm "acopiador." Mercado 4, Asuncion.

ANNEX XIII

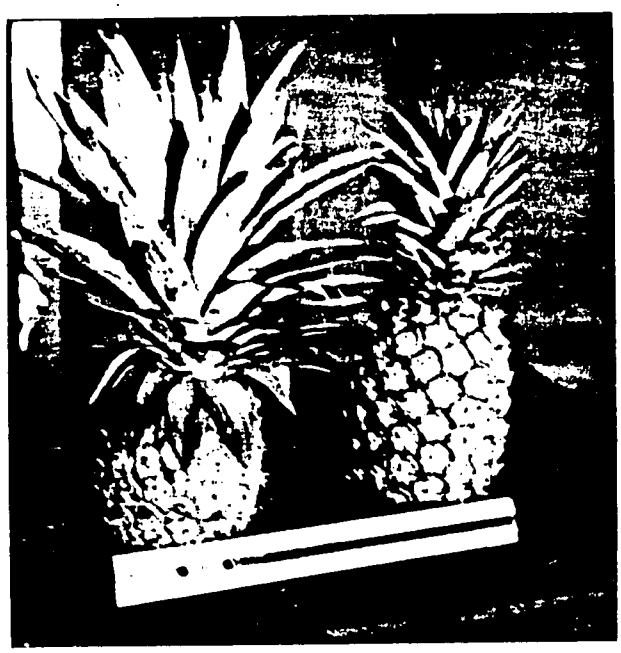
No. 8

BANANAS

No. 8. BANANAS: Third grade Carape. Note severe discoloration and small size. The ruler is 30 cm. long. Mercado 4, Asuncion.

NO. 9

PINEAPPLE



No. 9. PINEAPPLE: Smooth Cayenne variety brings a higher market price than the traditional variety (Abacaxi) due to larger size and freedom from spines. Right: No. 1 grade; note the relatively large butts (15 cm.) and well-proportioned tops (slightly less than the butt length). Left: No. 2 grade; note the smaller butts (11 cm.) and overgrown tops (over twice the butt length). Mercado 4, Asuncion.