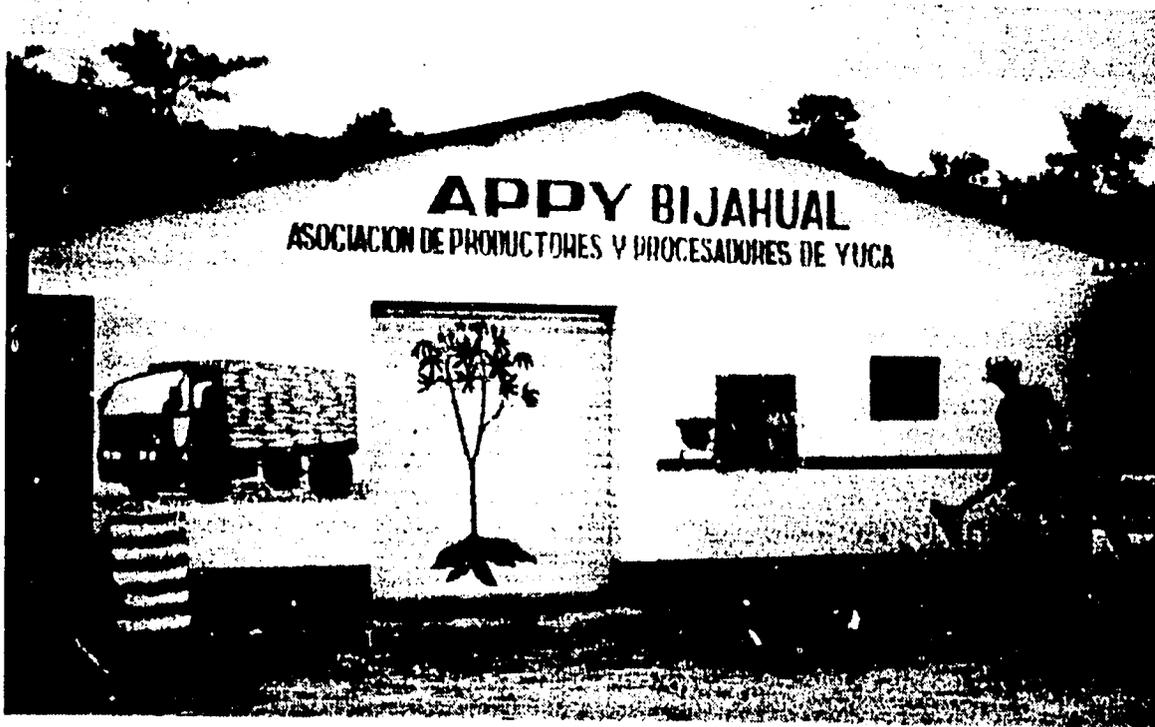


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UAPPY
UNION DE ASOCIACIONES DE PRODUCTORES Y
PROCESADORES DE YUCA DE MANABI, ECUADOR

EVALUACION Y RECOMENDACIONES



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ABOUT ACDI AND THIS REPORT

Agricultural Cooperative Development International (ACDI) is the overseas development arm of the U.S. agricultural and farm credit cooperatives. ACDI is part of the National Council of Farmer Cooperatives, which represents over 2,000 U.S. agricultural and farm credit cooperatives with over one million farmer members.

ACDI's membership includes U.S. farmer cooperatives, associations, and regular corporations which operate cooperatively. Legal structures vary because state laws regulating farmer organizations vary widely. Likewise, ACDI works with a wide variety of types of organizations overseas, looking for unity of purpose in who is represented and how they are served. In this report, therefore, the terms cooperative, association, and farmer organization are used interchangeably, while respecting the term each organization has chosen for itself.

ACDI's main purpose is to provide practical technical assistance to farmer organizations in developing countries. ACDI has 24 projects in 13 countries (1989), funded by contracts with the U.S. Agency for International Development (AID), the Inter-American Development Bank, The World Bank and similar institutions. Funding for this report was provided through the AID (Washington Cooperative Development Support Office) grant to ACDI for its central office and regional office for Latin America and the Caribbean.

TABLE OF CONTENTS

	<u>Page</u>
Preface	1
Glossary of Abbreviations Used in this Report	4
Key to Tables and Charts Used in this Report	5
I. UAPPY: A Snapshot of Explosive Growth	6
II. CASSAVA: Importance in the Americas and Coastal Ecuador	12
III. The CIAT Technical/Organizational Package for Cassava	18
IV. UAPPY as a Farmer Organization: Evaluation and Recommendations	26
Methodology	26
A. The UAPPY Staff	26
B. The UAPPY Assembly	28
C. APPY Local Level Organization	32
D. UAPPY Relations With Other Institutions	35
E. The Legal Basis for UAPPY and the APPYs	35
F. Technical Operations	36
G. Marketing Operations	37
H. Accounting Operations	40
I. Planning of Operations	45
J. Expansion Operations	49
K. Training Operations	49
V. Postscript: Stages in the Small Farmer Organizing Process	51
Footnotes	53
Bibliography	55
Appendix (Bound separately)	
1. By-laws of Coopecalifornia R.L.	
2. Why some cooperatives fail	

PREFACE

Evaluations of agricultural development projects are pretty boring. After reading one, today's development official tosses it aside and says "What does this tell us? That in the 'model valley' the project was dealt a fatal blow by a new insect, or an outburst of contrary leadership, or a market downturn caused by overproduction a continent away. Meanwhile our investment evaporated." The development experts, increasingly calloused to reports of such events, are tending to put their faith and investments into paving the way for the unseen hand of the free market. In countries with economies bound up in redundant layers of regulation, disincentives to investment, and failed government-run businesses, this approach is giving the experts a new feeling of accomplishment.

Back on the farm, there are still a few agricultural development projects producing outstanding results. As a result of a request from Dr. Jorge Chang of FUNDAGRO, this writer was sent to look at a group of cassava associations called UAPPY (Unión de Asociaciones de Productores y Procesadores de Yuca) in coastal Ecuador. The writer had no previous knowledge of the crop, the country, or the actors. Not easily deceived after too many years of working with Latin small farmers and their associations, he came away enthused by the rapid progress, technical agility, measured goal setting, and responsiveness to human and organizational problems shown by the UAPPY leadership and their technical advisors. While making the list of problems yet to be solved, as requested by UAPPY, he noted it is remarkably short compared to similar projects at the same stage, and the effort required to solve them is well within UAPPY's grasp, assuming there are no grave external shocks in the short run.

Critics may say that UAPPY has been financed by grants and subsidies, and that it could not stand to pay market rates of interest. Yet this is an experimental, demonstration project which has been gradually pushed by CIAT and FUNDAGRO toward commercial operation. The question of independence from subsidy is merely a matter of "how" and "when." The question of interest rates is directly related to that of owner equity input. The demonstration effect of UAPPY has exceeded CIAT and FUNDAGRO expectations, due to hard work and a good market. In some exceptional cases, APPYs (local processing associations) are being formed with surprising amounts of owner equity input, even in the poorest cassava growing communities. Small farmers can surprise the experts with their ability to "bootstrap" the capitalization of an enterprise they have seen working well in every day life, as opposed to having been told about it.

The UAPPY farmers are becoming aware of an important local fact which was not operative in previous CIAT cassava projects: during inflationary times, it pays to produce a product which has a link to an export market, and is therefore indirectly paid in hard currency. This advantage, which is a new and wondrous thing to subsistence small farmers, can be lost if UAPPY does not continue its bargaining position and unity in relation to the buyers of its products, in good times and bad.

Considerable spin-off and spillover effects of UAPPY are in evidence in the province of Manabi. This report is focused on the internal situation of UAPPY and its local affiliates, the APPYs, leaving little room to discuss fortuitous side effects. Two anecdotes are in order, however. Manabi area politicians have apparently added another item to their list of promises to voters. They still promise schools and roads, but now they also promise to "build an APPY." And the author was told by a highly respected former high official in the Ministry of Agriculture that Manabi can and should develop "a hundred APPYs" rather than the mere 20 planned by UAPPY.

UAPPY has achieved "take-off" by two important means: returning good income to the farmers, and convincing farmers that working together in a business setting is to their considerable mutual benefit. This has been done rapidly and dramatically, necessarily raising questions about the sustainability of the organization, especially in view of the imminent change of CIAT advisors.

The way in which events have unfolded in the UAPPY story has left a crucial gap between the visionary, entrepreneurial initial leadership and the rank-and-file farmer. This gap is almost always present in new farmer organizations, but the UAPPY constituency and short time frame present special challenges which are described here. This gap is not an "ability" gap, but an information and education gap. Part of the cooperative philosophy espoused by ACDI and its members is that the smallest and poorest of farmers can make valid decisions, given quality training and technical assistance. The CIAT and FUNDAGRO assistance to UAPPY in the organizational and management areas has been of uncannily high quality, given the technical nature of their principle mission. This report merely points to areas in which the existing, partially intuitive management direction can be made more specific, teachable and replicable.

A note is in order concerning the author's use of a term he himself once spoke with great loathing: "top down." After seeing farmer organizations succeed and fail for many reasons, the author has come to realize that not all farmer organizations that "started from the top" are automatically doomed. In fact many

very good ones got a needed head start "from the top" and became that much stronger when the farmers embraced the organization "from below" and made it their own. It is the author's opinion that UAPPY is well clutched in that farmers' embrace, and therefore has a much better-than-average chance for long-term survival and success. The main organizational issue in this kind of project is: do the farmers consider it their own, participate with genuine interest, and intend to keep it going? Observers are often perplexed by the internal organizational dynamic as the farmers work out the alignment of local interests while they gradually take more control of the central organization. The resulting new version may not appear exactly as the planners had envisioned, but ultimately such change is part of the local adaptation of the technical/organizational package.

A final note is needed to explain the order, content, and purpose of this report. After first presenting a brief overview of UAPPY's rapid growth, this report turns to the nature of cassava and the origins of the technical/organizational package. The questions regarding the organization are a combination of those asked of the author by the UAPPY leadership and the ones normally asked in an evaluation. Hopefully UAPPY and its leaders will find this report useful in making a road map for its future.

Discussions with Dr. Steven Romanoff of CIAT, Ing. Carlos Egúez of FUNDAGRO, Mr. Colon Mendoza, Administrator of UAPPY, and other UAPPY and APPY personnel made this report possible. The author expresses gratitude for their generous collaboration and admiration for their work.

GLOSSARY OF ABBREVIATIONS USED IN THIS REPORT

- 1) **UAPPY:** Unión de Asociaciones de Productores y Procesadores de Yuca, the union of 16 local cassava farmer processing associations (APPYs) located in a 70-kilometer radius around Portoviejo, Manabi, Ecuador.
- 2) **APPY:** Asociación de Productores y Procesadores de Yuca, the 16 local cassava chipping and drying associations; all are referred to as APPYs and distinguished individually by the community name.
- 3) **CIAT:** Centro Internacional de Agricultura Tropical, the Colombian-based institute which invented and promotes the cassava technical/organizational package.
- 4) **FUNDAGRO:** Fundación de Desarrollo Agropecuario, the AID-funded Ecuadoran development foundation which provides administrative and technical assistance to UAPPY.
- 5) **INIAP:** Instituto Nacional de Investigaciones Agropecuarias, the Ecuadoran agricultural experiment station located near Portoviejo, which gives research and technical support to UAPPY.
- 6) **MAG:** Ministerio de Agricultura y Ganaderia, the Ecuadoran department of agriculture, which gives organizational and extension support to UAPPY.
- 7) **AID:** U.S. Agency of International Development, UAPPY's main source of grant funding.
- 8) **ACDI:** Agricultural Cooperative Development International, the development arm of U.S. Agricultural Cooperatives.

KEY TO TABLES AND CHARTS

	<u>Page</u>
Table 1. Growth of UAPPY Cassava Association and Production of Cassava Products	7
Table 2. UAPPY Project Beneficiaries	8
Table 3. Cost of Production, in Dollars, of One Hectare of Cassava in Manabi. CIAT Non-Mechanized System.....	14
Table 4. Locations of Sixteen Cassava Processing Associations (APPY's) by Rainfall Zones and Typical Small Farm Cropping Pattern.....	15
Table 5. Summary of Grants to UAPPY	23
Table 6. Interest Rates and Terms of APPY Financing by UAPPY 1986-89 With Comparison to Bank Rates and Inflation	24
Table 7. Relationship between UAPPY Flour Production and Number of Employees Full Time in Central Office ..	29
Table 8. UAPPY 12 Month Balance Sheets Compared, as of June 30, 1987-89	41
Table 9. UAPPY Operating Statements Compared, June 30, 1987-89	42
Table 10. UAPPY Financial Ratios 1987-89. Statements for 12 Months Ending on June 30	44
Table 11. ACDI Report Card: UAPPY, Manabi, Ecuador May 1989	50
Chart 1. UAPPY Farmer Beneficiaries	9
Chart 2. UAPPY Sales and Profits 1987-89, In Dollars	10
Chart 3. Average Gross Payments to APPY Members and Non-Members 1985-88, In Dollars	11
Chart 4. Uses of Cassava Roots	13
Chart 5. Planting and Harvest Seasons for Small Farmer Crops, Province of Manabi, Ecuador, 1989	16
Chart 6. Organizational Structure of UAPPY, Manabi, Ecuador, May 1989	27
Chart 7. Age of Local Associations (APPYs) as of May, 1989	30
Chart 8. Exports of Shrimp to U.S. by China and Ecuador, 1984-88	38
Chart 9. UAPPY Grants Received and Profits in Dollars, 1986-89	48

I. UAPPY: A SNAPSHOT OF EXPLOSIVE GROWTH

The origins of UAPPY were in two experimental local cassava chipping and drying associations (APPYs) started in 1985. The APPYs doubled in number, farmer members, and flour production in 1986 (see Table 1). They more than doubled in number to 10 APPYs with 200 members in 1987. 1987 flour production increased five-fold over the previous year, 1986, and ten-fold over 1985.

In 1988 the number of APPYs increased by 60% to 16, members increased 75% to 350 and flour production doubled to 1,000 tons, twenty times the 1985 production. UAPPY hopes to double production again in 1989, while increasing the number of APPYs and members by roughly one fourth (see Table 1).

UAPPY and the APPYs also provide a market for numerous non-member small farmers, numbering about 500 in 1988 (see Table 2 and Chart 1). Counting an average of 5 members per family, the number of individual beneficiaries of UAPPY was 4,250 in 1988, which could rise to 6,000 in 1989 (see Table 2 and Chart 1).

UAPPY sales results have been recorded in financial statements since 1987, when sales were about \$13,700, of which just over 30% was profit to UAPPY (see Chart 2). Sales in dollars quadrupled in 1988 and quadrupled again in 1989, while profits were about 27% of sales in both 1988 and 1989 (see Chart 2 and Operating Statements, Tables 8 and 9, pages 41 and 42).

Average payments to individual farmer members more than tripled between 1985 and 1988, from just under \$100 per farmer to over \$300 per farmer (see Chart 3). Average payments to non-members also tripled between 1985 and 1988, and tend to be about half the amount paid to member farmers.

This picture of rapid growth raises several questions. For example: How important is cassava as a crop? What is the nature and origin of the technical and organizational system employed? What is the market and the source of financing? Where is UAPPY headed and what are its organizational needs?

This paper will address these questions in the following ways: 1) by discussing the nature of cassava and its economic importance, 2) By describing the role of the Centro Internacional de Agricultura Tropical (CIAT) in Colombia and coastal Ecuador, in mobilizing cassava farmers and rural support institutions to create the beginnings of a small farmer-based cassava industry, and 3) by presenting an evaluation of UAPPY as a farmer organization along with a number of recommendations for UAPPY's future.

Table 1. Growth of UAPPY Cassava Association
and Production of Cassava Products
in Metric Tons, years 1985-88, Manabi, Ecuador

YEAR	PERIOD	NO. OF APPY'S	NO. OF MEMBERS	PRODUCTS IN METRIC TONS			
				WHOLE FLOUR	STARCH FOR HUMAN CONSUMPTION	INDUSTRIAL STARCH	TREATED FRESH CASSAVA
1985	Experimental	2	40	50	-	-	-
1986	Semi-commercial Production	4	80	96	-	-	19
1987	Beginning of commercial prod.	10	200	500	3.5	11	28
1988	Commercial Production	16	350	1,000	5.1	1	-
1989	Expansion *	20	500	2,000	15	8	?

* Goals for 1989

Source: UAPPY, May, 1989

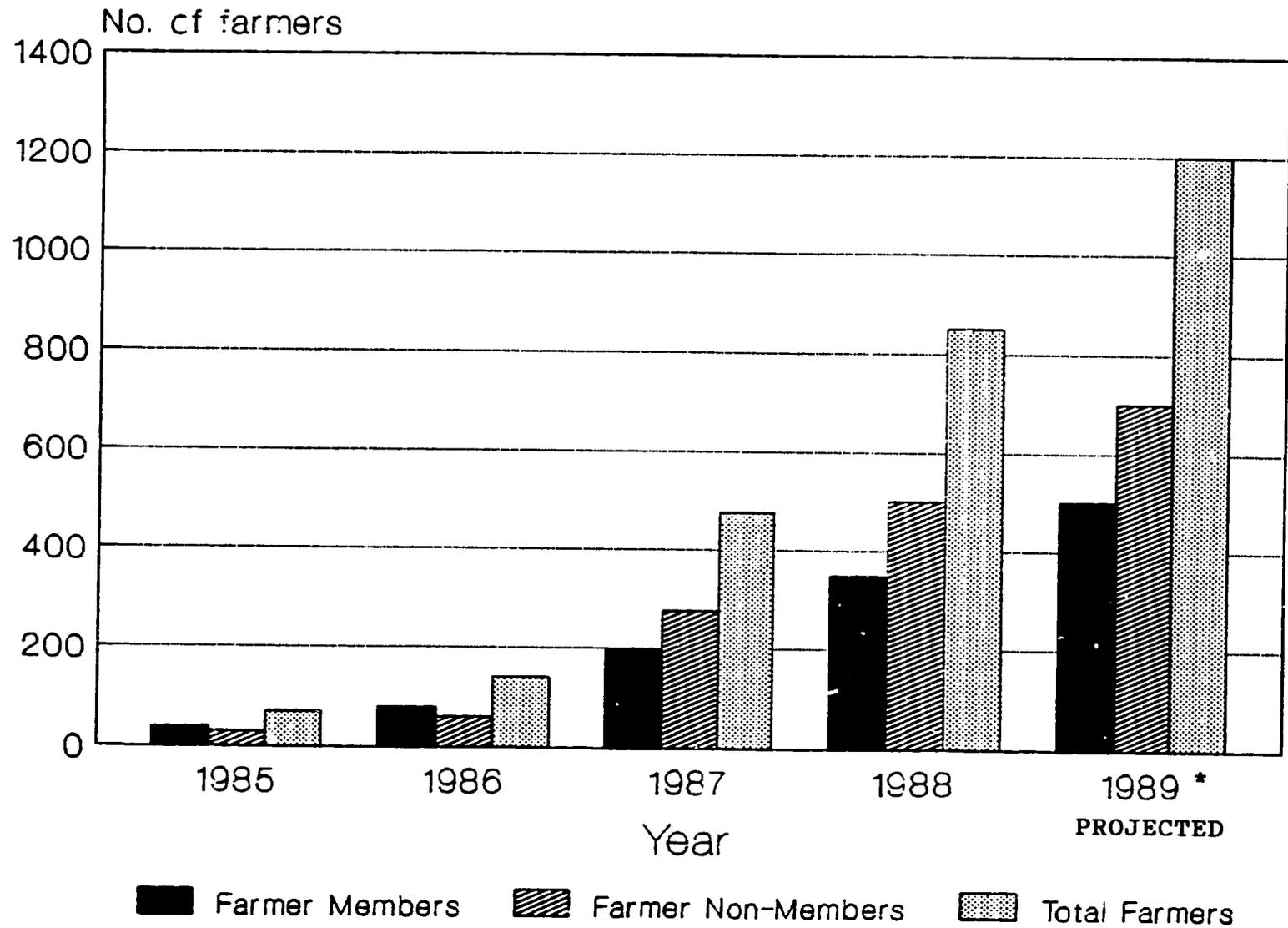
Table 2. UAPPY Project Beneficiaries

YEAR	FARMER MEMBERS	FARMER NON-MEMBERS	TOTAL FARMER BENEFICIARIES	FAMILY MEMBERS	TOTAL BENEFICIARIES
1985	40	30	70	5	350
1986	80	60	140	5	700
1987	200	276	476	5	2,380
1988	350	500	850	5	4,250
1989 *	500	700	1,200	5	6,000

* Projected

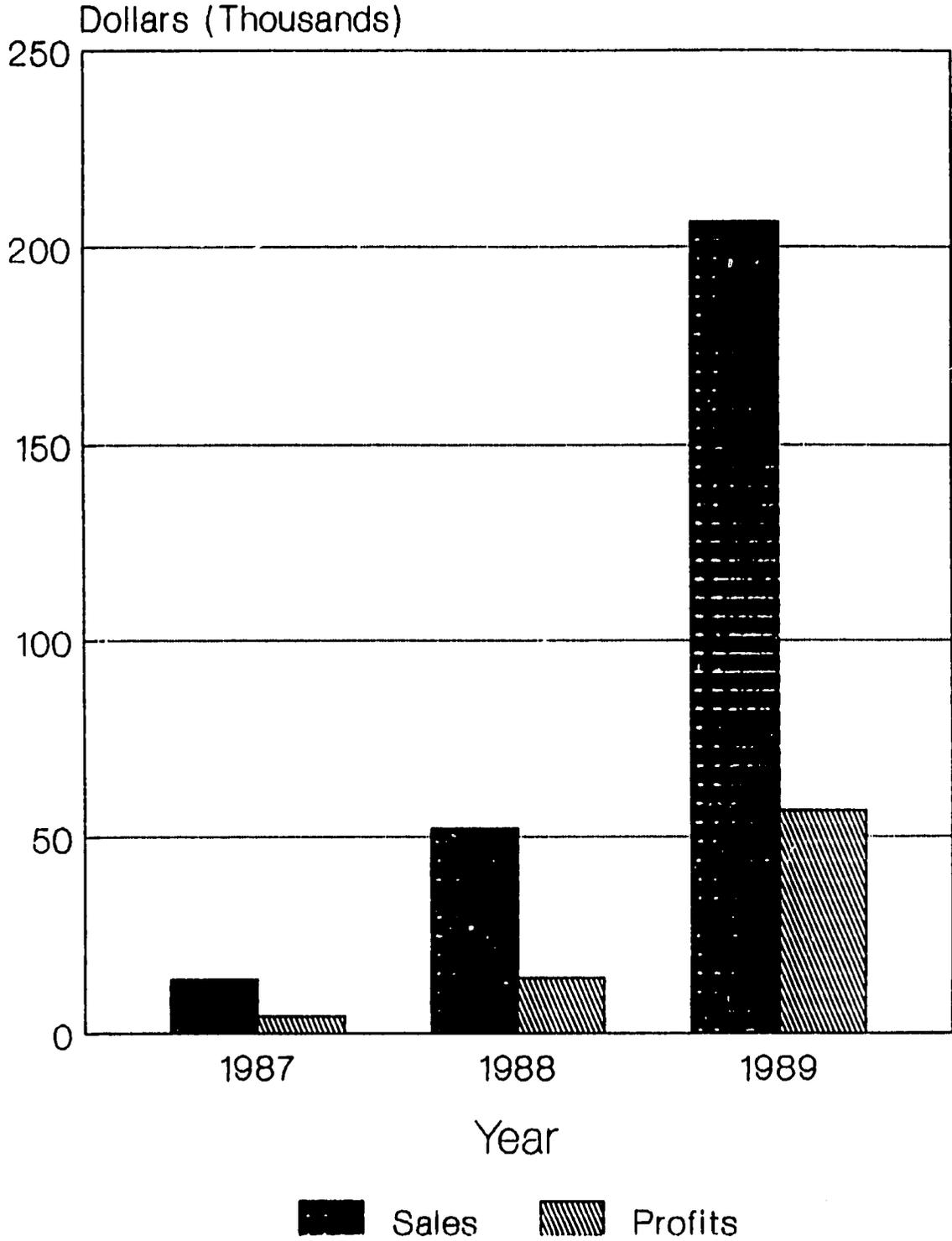
Source: 1985-88: INIAP
1989: UAPPY and author's projection

Chart 1. UAPPY Farmer Beneficiaries

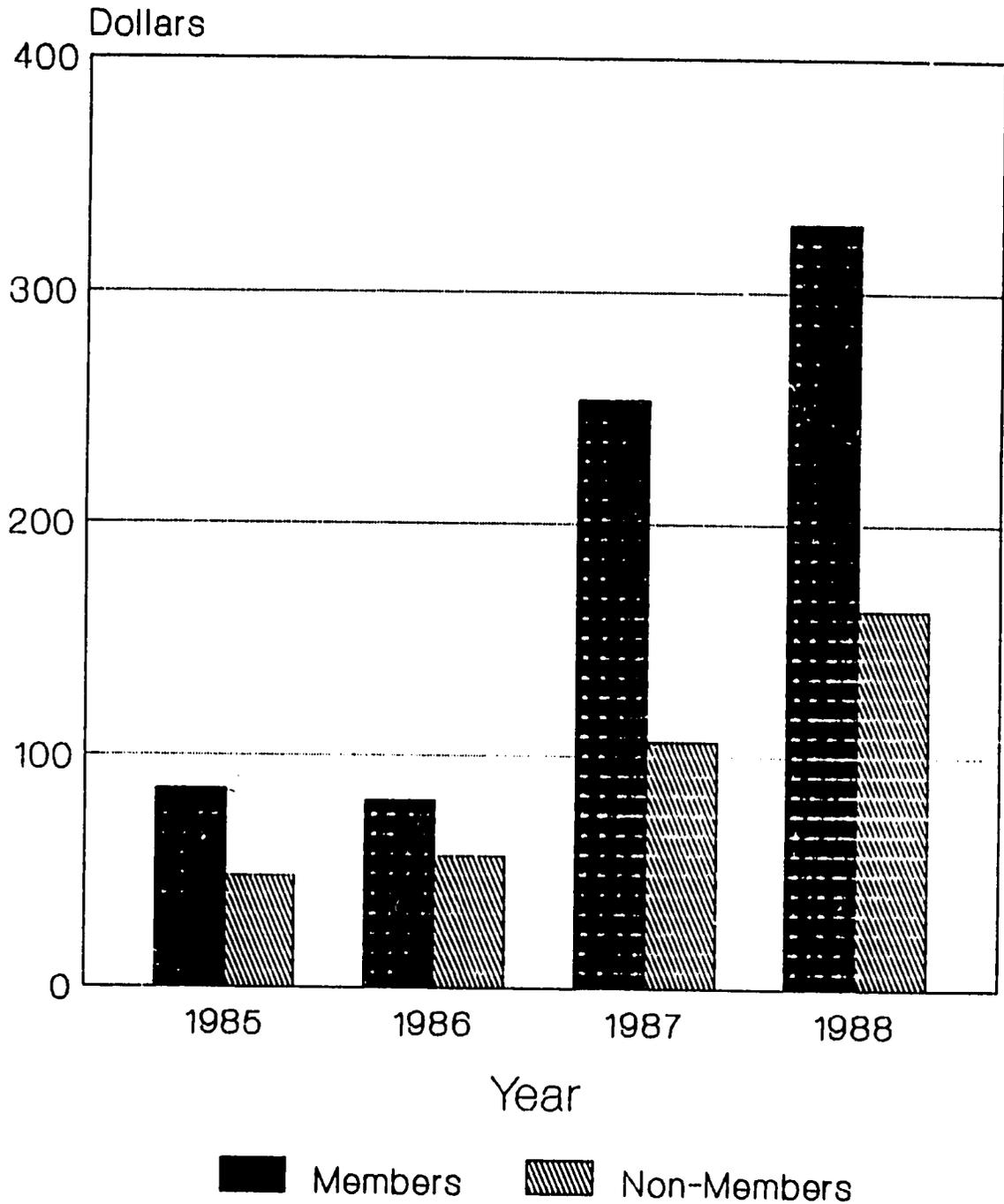


SOURCE: 1985-88 INIAP, 1989 UAPPY AND AUTHOR'S PROJECTION

**Chart 2. UAPPY Sales and Profits,
1987-89**



**Chart 3. Average Gross Payments
to APPY Members & Non-Members
1985-88 (In Dollars)**



Includes cassava purchases,
flour premiums and wages.

II. CASSAVA: IMPORTANCE IN THE AMERICAS AND COASTAL ECUADOR

Cassava (Manihot esculenta or yuca in Spanish) is a country-wide staple in Brazil and Paraguay. An estimated 125 million people in these countries derive more than 200 calories per day from cassava. Cassava is also a staple food in the jungle regions of Bolivia, Peru, and Ecuador, in the north coast and Santander regions of Colombia, and in the rural areas of many Caribbean islands, Mexico and Central America. Average daily consumption in the tropical countries of South America is 150 to 160 calories per person. (1)

In the Americas, over 40 percent of cassava production is destined for human food, another third of the production is used for animal feed, with the remaining product being used in industry for laundry starch, glue, food by-products, and chemicals. (2) Chart 4 is a simplified explanation of the uses of cassava.

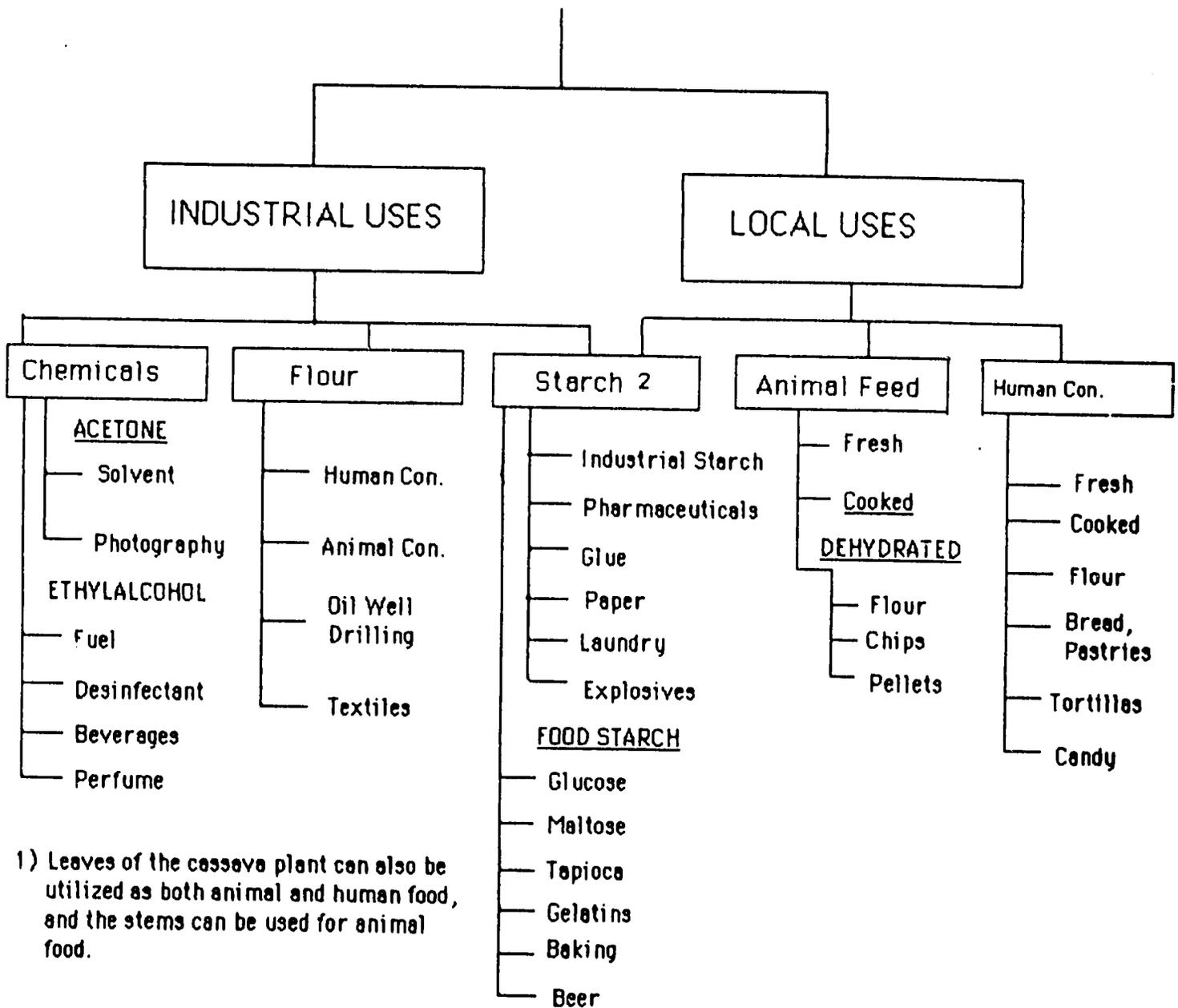
Although cassava produces only about one third as much protein as corn or sorghum, it is one of the highest producers of energy (calories) per area of land utilized, more than doubling the calorie yield of potatoes and tripling the calorie yield of corn. (3) An important feature of cassava is its starch content, which makes it desirable for its industrial by-products and for use in animal feeds. When used in certain feeds, it acts to hold granules or pellets together. Since 1986 cassava flour has come into demand as an ingredient in manufactured shrimp feed in Ecuador, because shrimp feed pellets must hold together between 6-8 hours underwater. (4)

Cassava is easy to grow and produces well on poor, hilly soils with adequate drainage. It is not mandatory to plow the soil, and disease or pest problems are minimal. (5) Rainfall required is a minimum of 400 mm per year over the first half of a 9-12 month growing cycle. In coastal Ecuador cassava is planted with the first rains of December and January, and is harvested from September to December. Flooding can be a problem in very rainy years, as can be lack of adequate rains. In coastal Ecuador yields are affected by either flooding or drought in about every third year.

Growing costs for cassava in the Manabi Province of Ecuador area are summarized in Table 3.

Most small farmers in the UAPPY membership area of coastal Ecuador grow other crops in addition to cassava. Typical farms in UAPPY's membership area are under 10 hectares in size and have crop mixes as summarized in Table 4. (6) In general, seasonal labor requirements for cassava combine well with the labor requirements for other crops, as summarized in Chart 5.

Chart 4. Uses of Cassava Roots ¹



1) Leaves of the cassava plant can also be utilized as both animal and human food, and the stems can be used for animal food.

2) In addition to industrial production, local starch production on a small scale is carried out in Ecuador using both traditional and modern technology, producing products for sale in the major cities for both food and non-food uses. Two of the Portoviejo APPYs are women's cooperatives which produce starch for human consumption.

Adapted from: Montalbo, in Romanoff & Toro, p. 14.

Table 3. Cost of Production in Dollars of One Hectare of Cassava in Manabi, Ecuador CIAT Non-mechanized System, Nov. 1988

				D O L L A R S		
	UNIT	NUMBER	PRICE	ITEM SUBTOTAL	COST/HA.	TOTAL
Total Cost						352.84
Direct Costs						260.11
Land Preparation	Day Labor	10	2.20		22.00	
Planting						37.71
Seed "Prieta"	Stalks	7142	0.0022	15.71		
Prepare stalks	Day Labor	4	2.20	8.80		
Plant	Day Labor	5	2.20	11.00		
Replant	Day Labor	1	2.20	2.20		
Manual Weeding	3 x day labor	20	2.20		44.00	
Harvest						156.40
Pulling	Day Labor	15	2.20	33.00		
Clean and Bag	Day Labor	7	2.20	15.40		
Bags (25% loss)	Bags	100	0.31	31.00		
Transport	100 wt.	350	0.22	77.00		
Indirect Costs						92.73
Admin 5%					11.84	
Interests 2%					54.46	
Land Rent					26.43	

Yield per Ha. 350-100 wt.....Price \$1.76/100 wt.

Gross sales \$616.74.....Net \$263.90

Net to family operation (add to net 50% labor, all admin. and rent).....\$370.37

Source: INIAP. S/454=\$1.00

Table 4. Locations of Sixteen Cassava Processing Associations (APPY's) by Rainfall Zones and Typical Small Farm Cropping Pattern Ecuador, Manabi Province, 1989

C R O P S	-----HECTARES-----				AVERAGE
	SUBZONE AND ANNUAL RAINFALL				
	SEMI-ARID 350 MM	HIGHLAND COFFEE 1,000 MM	LOWLAND CORN NO IRRIGATION 650 MM	LOWLAND CORN WITH IRRIGATION 650 MM	
CASSAVA	0.30	1.50	1.00	3.00	1.45
COFFEE	----	2.00	----	----	0.50
COTTON	2.00	----	0.50	----	0.63
PEANUTS	0.50	----	0.50	2.00	0.75
SUGAR CANE	----	----	0.50	0.50	0.25
CORN	2.20	0.50	1.00	2.00	1.43
PASTURE	----	0.50	1.00	3.00	1.13
TOTAL HECTARES	5.00	4.50	4.50	10.50	6.13
CASSAVA PROCESSING ASSOCIATION (APPY) LOCATIONS	2	5	7	2	
% OF APPYs IN EACH ZONE	13	30	44	13	

Source: Conversation with Mr. Colon Mendoza, Administrator of UAPPY, and Mr. Vicente Ruiz, Manager of Special Projects, UAPPY, on May 18, 1989.

Chart 5. Planting and Harvest Seasons for Small Farmer Crops,
Province of Manabi, Ecuador, 1989

	JAN	FEB *	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
Cassava	plant								harvest			
Cotton	plant					harvest						
Peanuts	plant				harv							
Corn	plant					harv						
Coffee							harvest					

* Weed control, largely by hand, is from February on.

Source: Conversation with Mr. Colon Mendoza and
Mr. Vicente Ruiz, UAPPY, May, 1989.

Furthermore, cassava is usually grown on the farmers' least valuable, least level soils, although it is intercropped more than half the time, usually with corn. Yields in coastal Ecuador range from 6 to 15 metric tons/hectare, largely reflecting the rainfall pattern.

Although there has not been a census since 1974, it is estimated that the typical small farmer in the Manabi area will have a cash family income from all sources ranging from approximately \$600 to \$2,000 annually. (7) Factors determining income include land holdings, crops grown, weather, family labor contribution, and management ability. INIAP's study of cassava growing costs (Table 3) indicates possible net income to a family operation of up to \$370 per hectare. The impact of an increase from 0.5 hectares to 2.0 hectares of cassava, as is typical for many UAPPY farmers since 1985, can therefore mean a net increase in family income of between 10% and more than 100%. The opportunity costs of such an increase in cassava production would be comparatively low, given that the alternative use of cassava land is usually pasture and family labor costs are an important component of growing costs (see Table 3).

Cassava is well suited to the small family farm. According to research done by Romanoff in Colombia, farmers who expand to more than 3 hectares of cassava tend to have management difficulties with harvesting and marketing, and therefore switch to other crops. (8) Thus cassava appears to lend itself to family operations of under 3 hectares, which is typical of the UAPPY farmers.

Despite its advantages of adaptability, ease of cultivation, and high yield, cassava is highly perishable once harvested, with a fresh life of only 2-3 days. This limits the amount of cassava the small farmer can plant, unless he has means of reaching the fresh market quickly or drying his product. In the case of coastal Ecuador, most cassava comes to market in September to December, at which time the fresh price drops by up to 70%. (9) In the mid-1980's cassava was declining in planted area in coastal Ecuador, due to the lack of drying and storage facilities and market access. This situation has now improved radically for the UAPPY cassava farmers, as will be illustrated below.

III. THE CIAT TECHNICAL/ORGANIZATIONAL PACKAGE FOR CASSAVA

Twenty years ago, the goal of the CIAT cassava program was to increase the productivity of cassava. After their initial efforts, the CIAT team, led by Dr. James Cock, incorporated a related social objective in their work: to increase the urban food supply as well, while maintaining their focus on cassava. (10)

While addressing the bottlenecks to increased cassava production, CIAT began formulating its multifaceted or integrated approach to helping small cassava farmers. The main components became:

1. Production Technology: Research and extension on new varieties, cultivational methods, disease and pest control, etc. This includes mobilizing and giving incentives to local researchers and extensionists.
2. New Technology: Introducing new drying, preservation, marketing and consumer education methods.
3. Social Organization: Helping small farmers organize in appropriate ways to utilize new technology to overcome local bottlenecks, using the methods of social science alongside applied agricultural research to insure a good match between the scale of equipment, facilities, local infrastructure, farmer resources and local farmer needs and capabilities.
4. Policy Studies: Identifying locally imposed bottlenecks such as subsidies for competing, more expensive products, importation of competing products such as starch, and exploring possible government incentives to increased cassava production, especially in areas of high need and potential.

CIAT field work on cassava during the last decade has focused on the introduction of new technology for processing and storage, as well as assistance to farmers in forming organizations around that technology.

The first significant field experience in accomplishing those goals was on the North (Atlantic) coast of Colombia, starting in 1981. This area was the site of a traditional production-based effort to increase cassava cultivation in the late seventies. But growing and technological assistance alone led to flooding the local fresh cassava market, causing disastrous low prices. Farmers would not plant commercially thereafter without a better market. (11)

At the same time that the Colombian Intergrated Rural Development Progran (DRI) was addressing the above results, CIAT was studying possible use of dried cassava in manufactured animal feeds. There was clearly a growing need for balanced feeds, and dried cassava could be an important ingredient at a price attractive to both farmer and feed manufacturer. But farmers, manufacturers, and investors were all reluctant to invest in the drying and milling process. They were concerned with highly fluctuating cassava prices, plus the need to have a minimum amount of cassava flour available to make incorporation in feed mixes feasible. (12)

CIAT and DRI combined their efforts and determined that local farmer associations could be established to dry cassava for sale to the feed mills. If the fresh price were high, only culls would go to drying, and if it were low, most of the cassava would be sold to the feed mills. By having storage as well as drying and milling facilities, the associations could hold back part of their product in storage during periods of low prices. The overall result would be to place an effective floor price under cassava and get farmers to produce more. (13)

The Colombian project started as an experiment with 15 small scale cassava farmers. After a second phase of demonstrations, the project entered the expansion or replication phase, in which local groups have multiplied to forty in number. These groups now operate commercially and serve about 800 member farmers and several thousand non-member farmers. (14) The Colombian groups were doing a lively business of selling cassava flour to feed mills by the mid-1980's. The problem of the north coast farmers has now become lack of farmland for further expansion. The model was further refined in experimental projects in Panama, Mexico and Ecuador.

The Colombian experience resulted in the current CIAT technical package for cassava. The processing technology was intentionally kept simple, cheap and small scale, in order to allow for small farmer adaptation, local control, and low energy and transportation costs. The processing system consists of three physical components: a simple motor-driven chipping machine adapted from a design originally from Thailand, a concrete drying floor, and a brick warehouse. This basic system allows the farmers to produce solar-dried cassava chips which can be stored for later milling into flour, using a portable flour mill which can be shared by several local groups through a regional association. The local facilities, including the chipping machine but not the flour mill, can be obtained and constructed for between \$5,000 and \$15,000, depending on the size and type of drying floor and warehouse. The entire system can be made portable and can be set up quickly for demonstration and testing purposes, by substituting

wood-framed drying screens for the concrete drying floor and utilizing existing community storage space.

The Colombian experience was studied for its social design and technological impact in 1985 by the CIAT anthropologist, Dr. Steven Romanoff. He was then assigned by CIAT to introduce the technology and organizational system to coastal Ecuador, while making improvements and adjustments for local Ecuadoran conditions. Romanoff placed early emphasis on social and organizational technology, as well as the technical package itself. This emphasis was shown to be essential in a cassava project in Mexico, in which large chipping and drying facilities were installed by the government and then left idle by the farmers, who found them unusable. (15)

The approach taken by Romanoff was to first identify the precise sub-regions of coastal Ecuador which have the greatest potential for small farmer cassava projects. Based on the Colombian experience, it was envisioned at the outset that one central milling and marketing association could service a group of up to 20 local chipping associations with about 20 members each. The criteria used by Romanoff to target potential locations included both technical and social concerns, and are summarized as follows: (16)

1. Overall geographical radius that could be served by the central milling association: 15-70 kilometers (actual Ecuadoran result: 70 kilometers).
2. Annual Rainfall: 400 to 1,200 millimeters, well distributed over a 4 to 8 month rainy season; minimum 4 month dry season.
3. Land Tenure: A dense population of low-income farmers having less than 10 hectares of land each, on the average.
4. Local Cassava Experience: Prior production of cassava at commercial levels or, alternatively, several years of lead time to develop such production.
5. Market for Cassava Flour: Fresh cassava prices which are low enough (or potentially low enough) to allow cassava flour to complement grain as a component in manufactured animal feed. This is determined roughly using the following formula:

$$\text{fresh cassava price} < \text{ or } = \frac{.85 \times \text{grain price}}{4}$$

where "grain price" refers to the common main ingredient in animal (usually chicken) feed. In the case of Ecuador, this would be corn.

6. Lack of an alternative market for cassava on a large scale in most years.

7. Lack of competing activities (for farmers and their land) in the dry season.

8. Growing methods/yields: Cassava not produced with irrigation nor with high yields (not over 15 tons/hectare).

9. Availability of institutional support: development institutions, extension service, experiment station, farmer organizational assistance, cassava technical support, grants (for demonstrations) and credit (for start-up of commercial operations), training in administration, etc.

10. Conditions at the local chipping association level as follows:

a. Potential for at least 10 hectares of cassava to begin, and 75 hectares at maturity.

b. At least 50% of cassava to be provided from members' own farms, balance to be bought from non-members.

c. A single town or community no bigger than 5 kilometers in radius.

d. Local resident farmer potential members without significant outside income.

e. At least 30 to 40% of potential members literate and numerate.

f. Access by road during dry season (no river transport).

g. Potential for 15 to 20 local chipping associations.

After surveying and mapping coastal Ecuador in 1985 to identify areas which would approximate the above conditions, it was determined that the city of Portoviejo would be a good base for a central operation and the first demonstrations of the technology were carried out in targeted cassava producing communities nearby.

The second important strategy used by Romanoff, after the surveying and targeting techniques described above, was to mobilize and incorporate the local institutional support network for agricultural development. Researchers from the local experiment station (INIAP) were invited and given incentives to do cassava research and socio-economic studies on the new experimental projects, and then to give technical assistance to the demonstration projects. The Ministry of Agriculture (MAG) extensionists and rural development agents were involved in technical, organizational, and legal incorporation assistance. A regional development committee involving these and other support institutions was set up for the specific purpose of assisting a milling association, which became UAPPY. A key part of this mobilization was in demonstrating the technology to important, high level institutional leaders and convincing them of the income improvements possible for the small farmer.

A third important strategy was to obtain grant funding for the initial demonstration projects by the first few local chipping and drying associations, called APPYs. The facilities for these were paid for by small grants from the British and Canadian Embassies. Subsequent local APPY chipping and drying facilities were paid for by a combination of loans and grants funded by grants to UAPPY from AID (with strong Ministry of Agriculture support) through the P.L. 480 program (see Table 5). Terms and interest rates for these loans and grants, which were made slightly more costly in each year, are summarized in Table 6.

A fourth important strategy was to aggressively sell cassava flour to the animal feed industry. The first attempt was to sell to the chicken feed manufacturers in the Portoviejo area, which failed. Initially the chicken feed manufacturers were reluctant to try a new ingredient even at a low price. Eventually some flour was sold to chicken feed manufacturers in Guayaquil in 1985 and 1986. Now, with the price of cassava flour at twice the price of corn, the Ecuadoran broiler industry cannot afford to incorporate cassava as a new feed ingredient.

The third sales effort was very successful. The shrimp aquaculture industry in Ecuador utilizes increasing quantities of manufactured feed in the form of pellets. At about the same time that the project was attempting to sell cassava flour, the shrimp feed manufacturers in Guayaquil were looking for a substitute

Table 5. Summary of Grants to UAPPY.
(In Sucres and Dollars)

YEAR	PL-480 FUND		CANADIAN-BRITISH EMBASSIES	
	SUCRES	DOLLARS	SUCRES	DOLLARS
1985	667,000	10,000		
1986	4,886,646	30,000	4,300,000	26,400
1987	20,000,000	100,000		
1988	40,000,000	100,000		

Total grants to date: \$266,400.

Source: UAPPY

**Table 6. Interest Rates and Terms of APPY Financing by UAPPY 1986-89
With Comparison to Bank Rates and Inflation.**

YEAR	UAPPY INTEREST CAPITAL LOANS	UAPPY INTEREST OPERATING LOANS	TERMS OF UAPPY CAPITAL LOANS	GRANT PORTION OF CAPITAL COSTS	BANK OPERATING LOAN RATES	ANNUAL INFLATION
1986	4%	10%	4 years	50%	18%	30.2%
1987	10%	12-20%	8 years	30%	22%	28.5%
1988	15%	20%	3 years	20%	28%	134%
1989	Predicted 28-35%		3 years	< 20% or none	> 50%	> 100% ?

SOURCE: Ing. Carlos Eguez, FUNDAGRO, May 1989

ingredient to replace formaldehyde, which had been used as a binder to hold shrimp feed pellets together underwater. The German health authorities had banned the export of such pellet binding chemicals. One feed factory was already using cassava flour as a substitute feed pellet binder. The CIAT representative cooperated with the other feed manufacturers in establishing cost formulae, obtaining research data on cassava nutritional and binding properties, and enlisting researchers to make up experimental batches of feed. The result was a burgeoning demand for cassava flour for shrimp feed, which has provided an excellent market for the expanding UAPPY flour production, as shown in Chart 2.

A fifth important strategy was to establish a pricing mechanism to share market risk and divide functions between the local APPY chipping and drying associations and the regional milling and marketing association, UAPPY. UAPPY made the investment in portable milling equipment and provided the equipment and marketing services to the APPYs in exchange for 30% of the mark-up between dried chips and flour, which currently equals about 10% of the gross flour price. The APPYs use their 70% for local operational expenses, capitalization, and refunds to members. This formula assures UAPPY of a source of income and gives both sides some insurance against downward price risk. Since the APPYs are the owners of UAPPY, they are the beneficiaries of UAPPY service programs and eventual UAPPY refunds.

A sixth important strategy is the use of farmer-to-farmer technical assistance and training. Colombian cassava farmers were brought to Manabi to explain and demonstrate the technical package in the farmer's language and from the farmer's point of view. This strategy can accelerate the technical education of small farmers by months or even years, and can prevent technical problems before they begin.

The farmer-to-farmer method was further employed locally through use of farmer-promoters selected from the initial successful APPYs which had received training from the Colombians. The work of the promoters was prescribed and made technically sound through use of a promoters' manual developed by Dr. Romanoff. The rapid growth of the APPYs and the ability of the APPY farmers to operate a processing facility and warehouse are in large part due to the success of the farmer-to-farmer method combined with the appropriate technical level of the promoters' manual.

IV. UAPPY AS A FARMER ORGANIZATION: EVALUATION AND RECOMMENDATIONS

Methodology

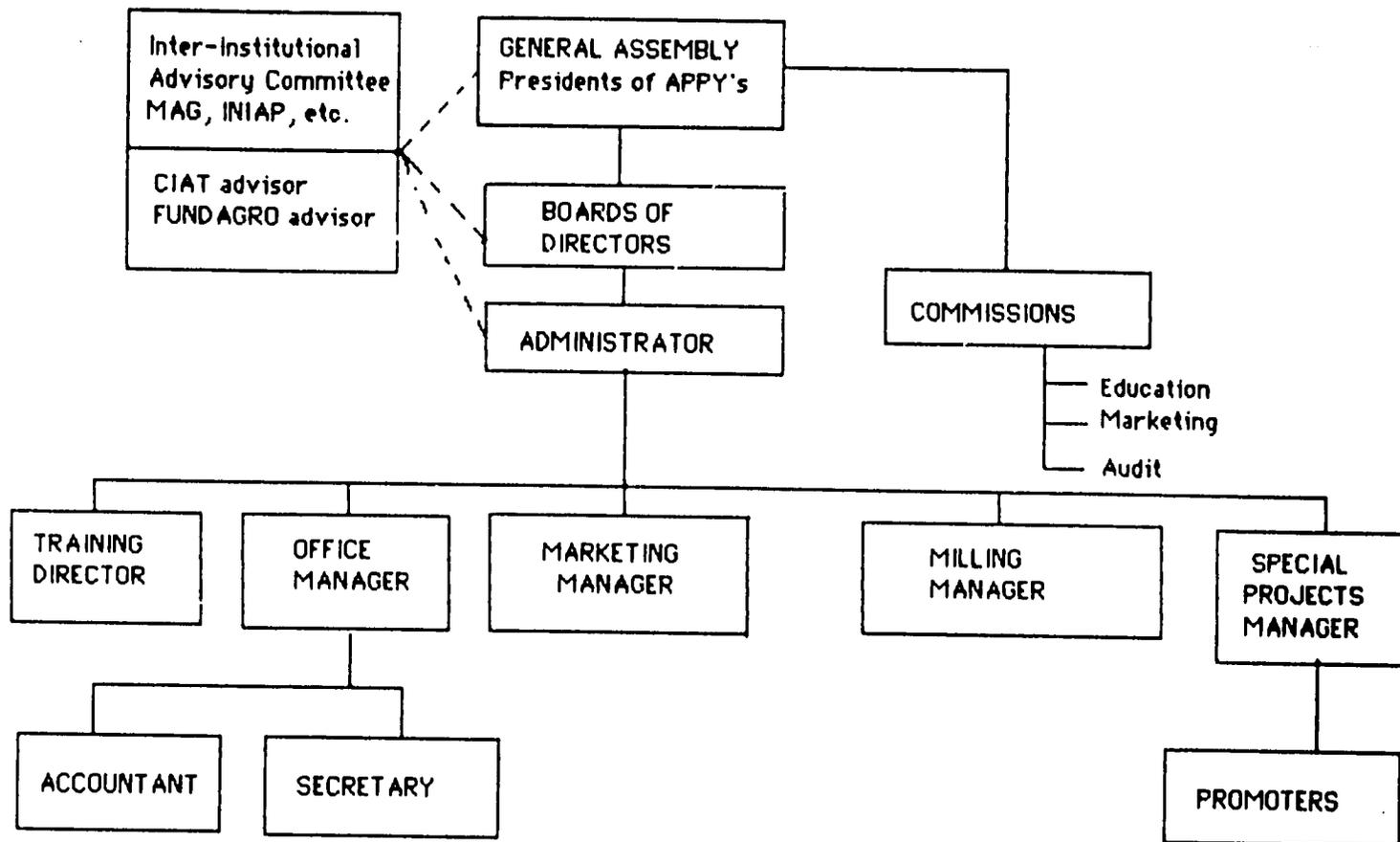
The methodology employed in this evaluation was to collect written materials and conduct exhaustive interviews of the leadership and employees of the following organizations: UAPPY, six of the APPYs at different stages of growth, and the representatives of CIAT, FUNDAGRO, and INIAP who have worked directly with the cassava project. A retired Sub-Minister of Agriculture, Mr. Hugo Egüez, complemented the background provided by Dr. Romanoff by contributing an invaluable overview of the local agricultural situation and the history of the cassava project. Field visits were made to five of the sixteen APPYs. Accounting books and organizational records were readily shared with the evaluator, as were planning and background documents. Additional background and overview information was provided by Dr. Jorge Chang of FUNDAGRO.

A. The UAPPY Staff

UAPPY currently serves 16 local APPYs with approximately 350 farmer members. The organizational structure of UAPPY is presented in Chart 6. The Administrator position is currently held by a farmer member who was a founder of one of the original APPYs. His work is supplemented by the FUNDAGRO representative and the CIAT representative. These three individuals comprise, in effect, a management and planning committee which has helped to channel the surge of growth of the APPYs since 1986, and which is giving the UAPPY Assembly and Board training, orientation, and increasing roles in planning future activities.

As a rule, it takes at least five years to start a farmer-owned business and assure its organizational stability. This rule is generally accepted by practitioners who develop farmer organizations. UAPPY is about three years old, yet most of the member organizations are under two years old. Therefore it is important that the CIAT and FUNDAGRO positions are continued for at least another two years, given the key role that Dr. Romanoff and Ing. Carlos Egüez have played in UAPPY planning and expansion. The fact that Dr. Romanoff is leaving the project in June, 1989, is a negative factor for the project. It will be difficult for CIAT to find a replacement with his entrepreneurial, planning and human relations talents, although his FUNDAGRO counterpart, Ing.

**Chart 6. Organizational Structure of UAPPY
Manabi, Ecuador, May 1989**



SOURCE: UAPPY AND CONVERSATIONS WITH REPRESENTATIVES OF CIAT AND FUNDAGRO, MAY 1989.

Carlos Egúez, has the earmarks of the ideal replacement in the short term. Ing. Egúez has had a year to learn about the business and organization under Dr. Romanoff's tutelage, and it is essential that he continue in his position.

One of the most difficult problems of small farmer projects is that of hiring and keeping long-term management personnel after the initial outside "catalyst" personnel have moved on to other projects. An important part of the solution to this problem is training boards of directors to understand and value the role of the manager. Without this understanding, boards may unreasonably hold down the manager's authority and salary, often with disastrous long-term results.

In those cases in which the manager is a farmer, there can be a tendency to change managers often. Extreme cases become like "musical chairs" among the members. This will damage the enterprise and the organization unless there is a stable professional staff to perform management functions.

UAPPY staff members were found to be very highly motivated and hard working. All of those interviewed had clear understandings of their roles, adequate skills and the desire to improve their skills, and, where appropriate, made good use of written planning documents and records to perform their work. The overall number of UAPPY employees is appropriate for the current size of UAPPY, as illustrated in Table 7. However, the skill mix will naturally evolve with UAPPY activities, and the UAPPY leaders will probably cut staff members if grant funding is ended.

B. The UAPPY Assembly

The UAPPY Assembly, consisting of the Presidents of the local APPY's, is a relatively new entity in that most of its members are from very young APPY'S. Chart 7 illustrates the rate of formation of APPYs and their current age. Approximately 75% of the APPYs are under two years old as of this writing. The evaluator attended an informal meeting of the Assembly held after a CIAT/CIMMYT corn-seed production demonstration at one of the APPYs. The meeting was well-run and participation by those present was positive and orderly, indicating that the basic internal dynamic of the Assembly is healthy. Although this is an organization whose original impulse came from "the top," all of the farmer participants interviewed displayed a good understanding of the organization as well as a strong motivation to continue and expand.

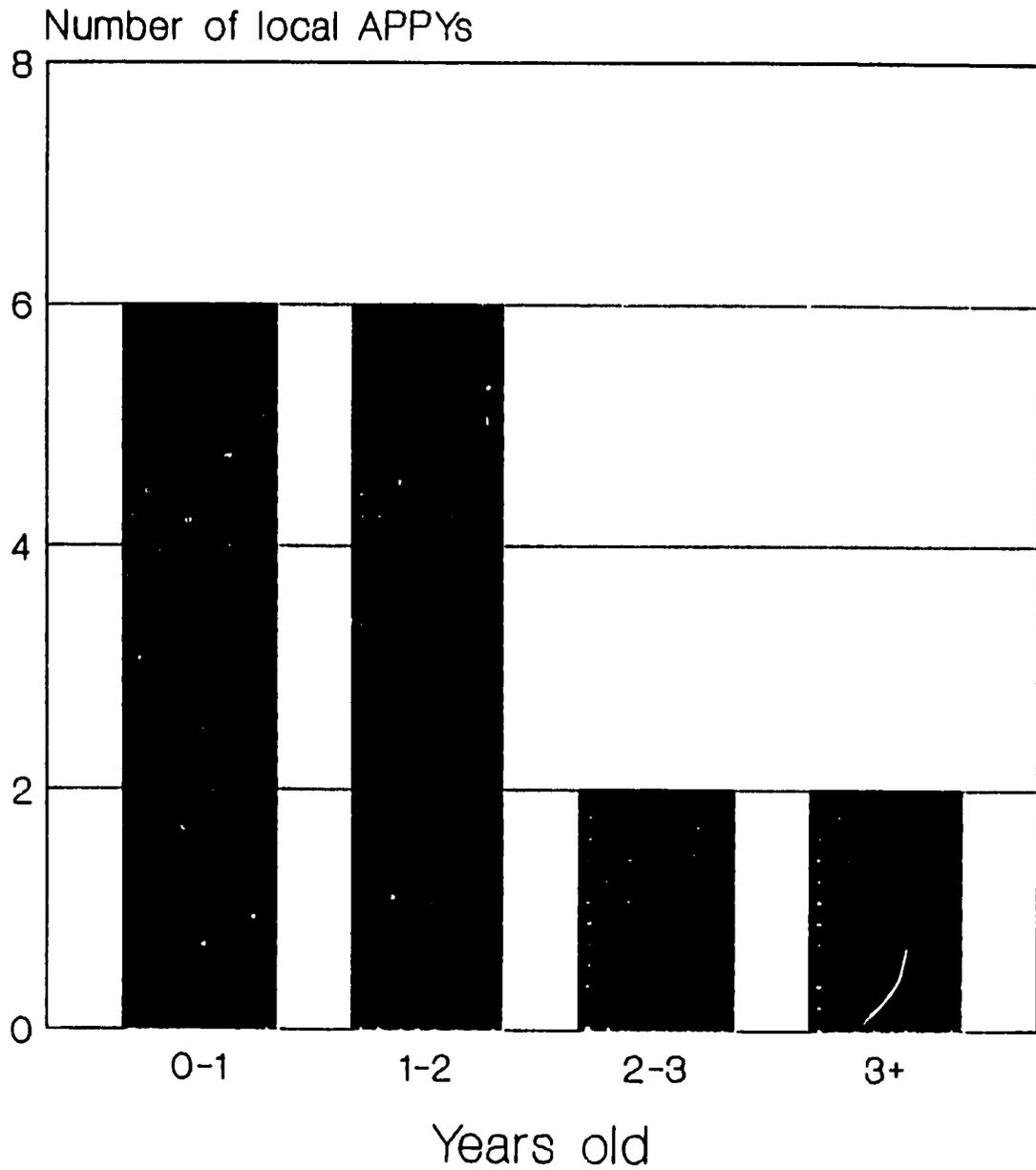
Table 7. Relationship Between UAPPY Flour Production and Number of Employees Full Time in Central Office.

YEAR	UAPPY EMPLOYEES	METRIC TONS OF FLOUR PRODUCTION	METRIC TONS OF FLOUR PRODUCED PER EMPLOYEE
1985	-	50	-
1986	1	100	100
1987	3	500	167
1988	9	1,000	122
1989	14	2,000 *	143 *

* UAPPY projection.

Source: UAPPY, May 1989.

**Chart 7. Age of Local Associations (APPYs)
As of May, 1989**



75% under 2 years old
87.5% under 3 years old
Source: UAPPY

The UAPPY Assembly appears to play the role normally played by a board of directors. This is typical of a new small farmer organization of this size, and should not be discouraged as long as the newer APPYs require training and desire to participate. The UAPPY Assembly consists of three distinct sub-groups (in addition to the sub-groups defined by geography, levels of income and sophistication of members) according to their time of formation and the terms of financing for their plant construction and equipment purchases. Table 6 summarizes the changes in financing offered to the new APPYs as they have been organized.

The three APPY sub-groups consist of: 1) those APPYs which risked their time, labor and crops on an experiment in the original 1985 tests of the chipping, drying and flour-milling technology, but who nevertheless received their facilities as grants, 2) those APPYs who received their facilities with a combination of partial grants and low interest loans, and 3) those APPYs which are receiving smaller partial grants while paying higher interest rates.

A fourth group of APPYs may be formed in the near future, which will probably not receive grants, while paying close to market rates of interest on loans. Inflation in Ecuador has worsened in recent months, meaning that the newest group of APPYs may be paying interest rates of three to four times that paid by the earlier groups. Predictions of 100% inflation in calendar 1989 were being made in May, 1989. The difference in total interest payments made by an APPY started in 1987 and one started in 1989 could be very great. This was difficult to avoid due to the demonstration nature of the project. Considering the term of up to eight years for part of the credit extended by UAPPY to a new APPY, this fact presents a threat to the future organizational unity of UAPPY. At the same time, the gradual movement toward use of loans rather than grants, plus the raising of interest rates, are healthy in that they should encourage member investment and discourage unnecessary borrowing.

The UAPPY Assembly needs to activate and train its three existing commissions: member education, marketing, and audit (vigilancia). Activating these commissions and providing them with management information about UAPPY operations is essential to the future organizational health of UAPPY. Small farmers who join a new organization for economic reasons take a close interest in their joint financial affairs, and their conversations with each other become the newspaper of the organization. If the news is fairly and accurately reported, the organization can prosper. If the news is based on partial information and supposition, then the organization will suffer. This is especially true of new organizations which experience rapid growth, have a heterogeneous member base (geographically or demographically), and receive

substantial outside grants or technical assistance. There are few human institutions to compare with the farmer rumor mill, in its speed and power to validate, question, or condemn.

C. APPY Local Level Organization

The leadership and members of UAPPY and the APPYs need more training in the basic principles of farmer cooperation. These basic principles are the same for cooperatives or associations, although the laws regulating each vary slightly from country to country. So far the basic philosophy guiding the organization seems to be: "it is good to build a community institution which increases farmer income and the opportunities of members and their families to work for a wage." This overall goal is important and has been achieved to a surprising degree in a short time by UAPPY. However, there are already signs of variation in operating methods between the APPYs. These methods should be made more uniform for the sake of the unity of UAPPY, as well as assuring equitable treatment for the farmer member. The basic principles of farmer cooperation can be summarized as follows: (17)

1. The User-Owner Principle: The people who own and finance the association are those who use it (in this case, the farmer members who produce and process cassava at each APPY).
2. The User-Control Principle: The people who ultimately control the association are those who use it. (At the same time, they will necessarily delegate substantial control to management).
3. The User-Benefits Principle: The association's most important purpose is to provide and distribute benefits to the users on the basis of their use (that is, proportionally to usage rather than based on equal shares).

These principles distinguish associations and cooperatives from other types of business organizations. There are other principles which are of secondary importance, such as one member-one vote, the need for member education, political and religious neutrality, and limited return on investment.

An important reason for teaching and practicing these principles in an association is that without such a guiding philosophy there is an inevitable tendency for ownership, control and benefits to shift away from the farmer-owner-users to outside investors, politicians, and non-farmers or non-community members. This is especially true if there has been an early economic success in the original association, as is the case of UAPPY, or

if there is a large group of non-members selling to the association, which is also true of UAPPY. Even if outsiders are not a factor, there is a tendency for some farmer members to view the association as any other local political organization, and to apply rules of behavior learned in that arena. It must be taught early-on that the survival of a small farmer organization rests on following a distinct set of rules as set out in the principles of cooperation. "Local politics as usual," untempered by user-control and user-benefit thinking, will often result with most of the marbles resting in a few pockets. This holds true in a wide variety of cultural or political settings.

The members also need training in financial planning and management on a level appropriate to their scale of business. Simply providing them with information is not enough. To use that information they need to know how to deal with simple financial statements and cash flows so they can have answers to these basic questions:

1. Did we make money last year? How much? Is that good compared to others like us?
2. How much do we owe, and how much is owed us?
3. What is our net worth, and how is that defined?
4. What are our potential sales in the coming year?
5. How much working capital do we need to operate next year?
6. Of the money in the bank, how much is needed for various operations and how much is available to the members?
7. Are we strong enough to qualify for a loan, and how is that defined?
8. Can we withstand an emergency and still operate?
9. Are our costs of operation reasonable compared to others like us?
10. How much should each of us invest in the operation, and how should that be calculated?
11. How much should each of us receive as our share of the profits, and how should that be calculated?
12. Do we have our taxes (if any) properly reported and paid?

New small farmer organizations are under tremendous pressure to distribute their liquid assets, that is, to stay broke. First of all, most of the members have large families and modest incomes, and they will remind each other of this fact while meeting to make financial decisions as a group. Secondly, most of the previous community financial efforts, such as collecting funds to build a school or buy uniforms for a football team, utilized the funds enterely as soon as the goal was met. Thirdly, bitter previous experiences may have taught that keeping a community fund intact without all or part disappearing or being spent on other

projects is a difficult task. Fourth, and this is increasingly true in Ecuador, inflation erodes assets kept in cash, while it rewards "investments" in hard goods.

One Mexican farmer defined the problem this way: "The members of the farmers' organization operate on the idea of montonismo. As long as there is money in the montón (stack or pile of money), you can keep withdrawing, and since lo que es de todos no es de nadie (that which belongs to everybody belongs to nobody), you should keep withdrawing until its all gone."

Therefore it was not a surprise to the author when one of the more financially successful APPYs suddenly distributed most of its cash to the members in May, 1989. This was done on the unconfirmed theory that future payments from UAPPY (which is to say, from the other APPYs) would be adequate to meet most operating needs in the coming season. Meanwhile UAPPY was still far from obtaining the financing it was seeking for the same season.

Clearly the action of distributing the funds had a rational basis in the APPYs members' experience, yet such action by all the APPYs would greatly weaken their movement, especially in a year in which they intend to double their production and sales while paying much more than before to interest.

Furthermore, the APPY distributed their cash to members as equal shares, although apparently some members produced much more cassava than others (that is, their amount of individual usage of the association facilities varied). This is how many small farmer associations start out distributing dividends, shares, or profits. It is natural to continue thinking in the "all for one, one for all" vein that got them working together in the first place. Experience shows that the bigger producers eventually calculate the amount they are subsidizing the smaller producers and they agitate for equitable (proportional) payments rather than equal payments. If their demands are not met, they may take their product elsewhere or start a new processing plant of their own. The small producers make their own calculations and usually conclude they are much better off with the big producers belonging to their group (assuming they get along with each other, more or less) because without the big producers, their costs per unit are much higher and they might have to go out of business. Thus the principle of equitable (rather than equal) user benefits has a basis in how things work.

The need of small farmers for training in business management and financial planning is greatly increased when the farmers start a business together, assuming they want it to continue in good years and bad. This is certainly not limited to Ecuador or the

UAPPY members, and in fact the UAPPY staff and leaders are educating the members as well and as fast as can be expected in most areas.

D. UAPPY Relations With Other Institutions

This area has been handled exceptionally well by UAPPY advisors and leadership. Utilization and mobilization of personnel from local and national institutions such as INIAP (the national agricultural experimental institute) and MAG (the Ministry of Agriculture), have been excellent. This project may become a textbook example of how to leverage such resources. One INIAP technician spoke of UAPPY as if it were his second office or his principal work project, and his help (and that of his INIAP colleagues) was greatly appreciated by UAPPY staff. CIAT has clearly introduced more than a technical and organizational package for farmers. It has also provided an example of how various technical advisors can work together to help small farmers, the local economy, and their own careers.

E. The Legal Basis for UAPPY and the APPYs

UAPPY has legal status (personeria juridica) as an agricultural association. Although this type of organization is easier to form than a cooperative, and has the backing of the MAG, the law which regulates associations is rather brief and non-specific, leaving the association to look elsewhere for philosophical and practical guidance as to what to put in its by-laws. The by-laws of UAPPY are not specific on the crucial points of management of member capital, pay-outs to former members and heirs, conditions for member entry and exit, etc.

There has been one case of action by an APPY to expel non-producer members, which was overturned by the Ministry of Agriculture because the by-laws of the APPY did not spell out adequate procedures and guarantees. The appendix to this report contains a copy of the by-laws written by the author and the members of Coopecalifornia, R.L. of Parrita, Costa Rica. The sections marked provide relevant examples for UAPPY and the APPYs to use in reforming their by-laws to deal with these kinds of issues.

The APPYs have legal status in nine of sixteen cases. The remaining seven have been prevented from incorporating, under a recent government ruling, until all the members have land titles. They are able to operate as "pre-associations," and the practical effect of not being incorporated is of minor importance unless

they develop sizable assets or bring lawsuits on themselves. UAPPY should work with other farmer organizations to overturn the land title requirement.

F. Technical Operations

The evaluator arrived during the season of least activity at the local level. However, he was able to observe cassava flour milling and starch production, as well as use of the drying and storage facilities for peanuts and corn. The technical operations, including plant construction, chipping machinery, technical training and coordination all appear to be very well carried out.

The APPY members obviously take great pride in having built the first community facilities or modern buildings in their area. They are making good uses of these facilities all year, for other crops in addition to cassava. One group (the Miguelillo APPY) has begun the construction of a second story on their warehouse, using the farmers' own funds.

Another group (the El Junco APPY) had just begun operations using a minimum of investment and a maximum of borrowed facilities and equipment. Despite lack of experience and very minimal facilities (the ground floor storage area of a house) they had just completed a season of much better-than-predicted product volume, and their records showed meticulous care.

Two APPYs are women's cooperatives which produce starch for human consumption. The manager and some members of one of these groups (the San Vicente APPY) were interviewed. They are very skilled at the more complicated technical process of producing starch for human consumption, and they are appreciative of UAPPY assistance in improving their facilities, helping them with operating loans, and marketing their product.

The UAPPY portable mills use power sources (high RPM air-cooled gas engines) which are not holding up under the strain of commercial production and should be replaced with higher torque, lower RPM engines with proper gearing. The goal should be for the engines to last through an entire season without rebuilding, and possibly to run more and bigger portable mills at the same time. UAPPY could benefit greatly from an extended visit by a small-scale equipment engineer or an experienced milling mechanic.

The portable rotary mills are of local construction and work well, but they could be better sealed to keep dust down, thus protecting workers and equipment while increasing milling yields.

G. Marketing Operations

UAPPY has opened the market for cassava flour in shrimp feed manufacturing, as mentioned above. A review of the market for shrimp and shrimp feed is beyond the scope of this report, however, a few general comments can be made. Ing. Carlos Egúez, the FUNDAGRO advisor to UAPPY, provided the following background on the shrimp feed and cassava flour markets.

Ecuadoran shrimp exports to the U.S. have grown rapidly in recent years, as have Chinese exports of shrimp to the U.S. (see Chart 8). Because of the combined export volume increases of the two countries, predictions are that shrimp prices will continue to decline, and the Ecuadoran producers will be put under a cost-price squeeze, resulting in a shake-out of inefficient producers.

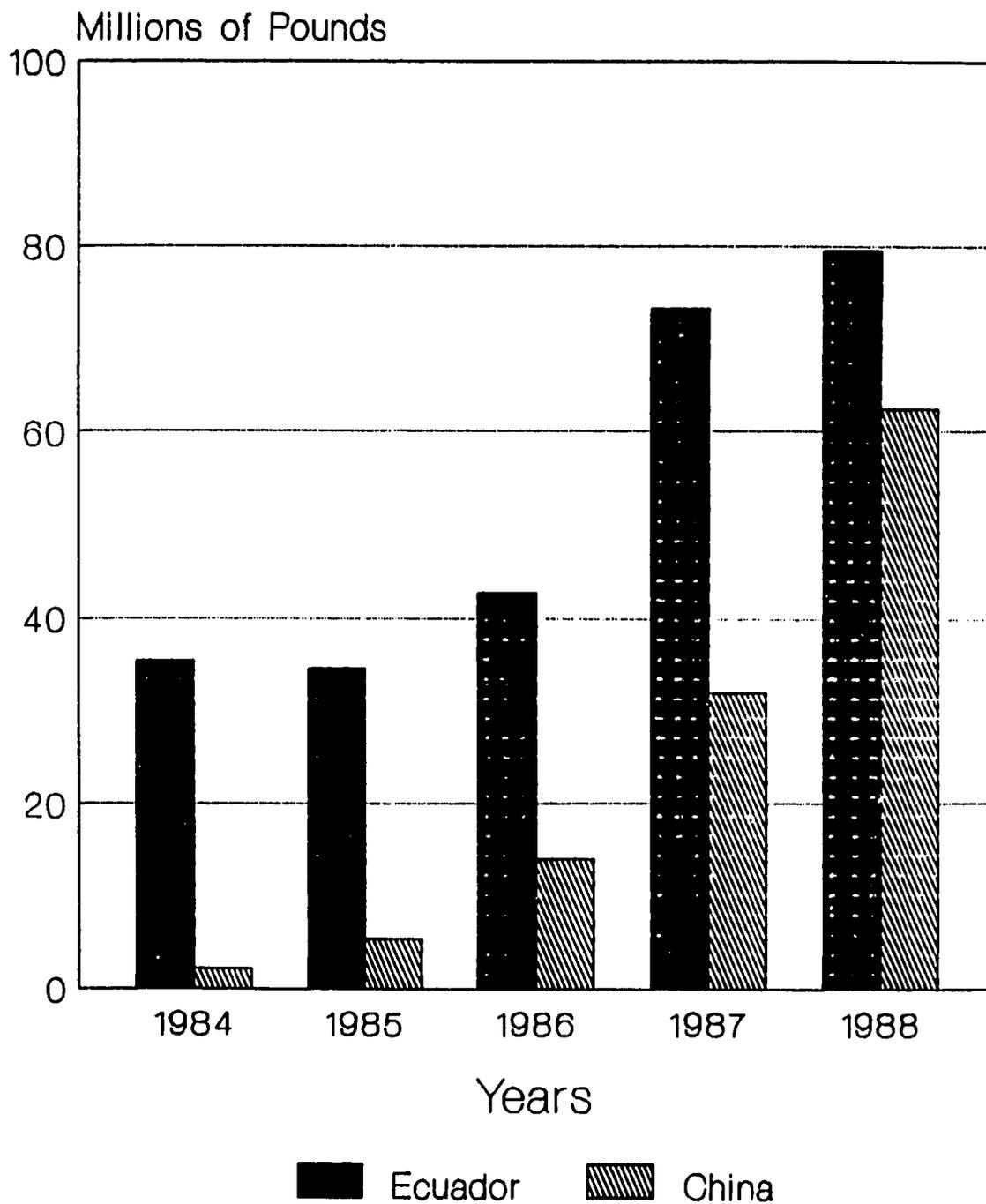
Only about 40 percent of Ecuadoran shrimp producers utilize manufactured feed, and only about half of these use feed on a regular basis. At least 60% of producers prefer to use low-density production methods, obviating the need for feeding. The level of cassava content in manufactured feed is currently only about 5% of total weight, which could be raised as high as 12% with no negative effect on the shrimp.

Shrimp ponds are very expensive to build (\$6-8,000 per hectare) and the preferred method of expansion is now to purchase existing ponds. If the more efficient shrimp producers (who tend to be feed buyers) buy out the less efficient ones, there may be increased demand for manufactured feed, even though overall Ecuadoran shrimp production could stagnate or decline. Due to the pellet-binding qualities of cassava flour, it appears that it will be a necessary ingredient in the future. A possible substitute is wheat, which is currently much more expensive than cassava flour.

The cassava flour price is currently about twice the price of corn (5,600 sucres vs. 2,800 sucres per hundredweight). Without the shrimp feed market it is estimated that cassava flour would be worth only 90% of the price of corn (2,520 sucres per hundredweight vs. 2,800 for corn).

UAPPY has been told by the feed manufacturers that they will need 6,000 tons of cassava flour in 1989, of which UAPPY intends to produce 2,000 tons. UAPPY estimates that other Ecuadoran producers will produce 2,000 tons as well, leaving a shortfall of 2,000 tons. In 1990 the manufacturers estimate they will need 8,000 tons.

Chart 8. Exports of Shrimp to the U.S. by China and Ecuador 1984-88



Source: LMR Shrimp market Report
(Vol. 17, No. 11)

UAPPY personnel believe that there will continue to be excellent demand for cassava flour for two or three more years, based on their conversations with the feed manufacturers. At that point (1991-92) there will undoubtedly be much greater overall production of cassava and cassava flour by competing firms, including possibly some form of backward integration by the feed manufacturers. UAPPY must therefore keep its position of leadership (and the loyalty of its members) by considering the following actions:

1. Produce a quality product, and keep a reputation for quality and service to the buyer. This assures UAPPY that it will have a "home for its product", meaning UAPPY will have a market when other producers will not during times of over-production. This requires training and disciplining of members, especially since production is decentralized at the APPY level.

2. Diversify its product line, to include possibly more starch sales and fresh cassava exports. This means aggressively seeking more research funding and investment capital. If an industrial starch plant is started by investors, UAPPY should try to position itself to be a preferred supplier. UAPPY should study the fresh cassava market in the Caribbean and South Florida, where fresh cassava is increasingly marketed waxed, nitrogen packed or frozen.

3. Increase its product volume and milling efficiency, building bigger and better mills. This requires a willingness of members to invest, take risks, and accept new members. Related goals would be a lower milling cost per ton and a lower break-even point in terms of overall product volume. The APPY operations would continue to be viable for chipping, storage, and some local milling.

4. Train members to stick together, on the business side, using the discipline of marketing contracts and loans with strict conditions, as well as on the social side, building organizational unity via training, motivational, and social-cultural activities. It is said that a farmer organization will last no more than one-and-a-half generations without a good training program. The second generation of farmers has a tendency to undo what their fathers built unless they are indoctrinated as to the original reasons for building it.

5. Give good service to members, both in absolute terms and in terms of member perceptions. This means developing a strong board, having good management, and having a long-term strategic plan. It should be remembered that farmers almost always define "good service" as meaning a good price for their product and prompt payment, and many farmer organizations have failed by trying to substitute other services for this very basic one. For a large number of farmers there is no other truly important service.

6. Learn to bargain effectively, which means seeking unity with other producers and delegating negotiation authority to a committee.

The above strategy is typical of the strongest type of farmer organization, one which is market-led, using every means to anticipate and quickly adapt to market changes, rather than being the unwitting victim of those changes.

Some of the above ideas are already contemplated for the UAPPY demonstration center, currently under construction. However, the most important element of the demonstration center is currently incomplete, which is member understanding and commitment to the concept and necessity of the demonstration center as part of an overall strategy. This is a natural outgrowth of the fact that the APPYs are relatively new, the farmers are inexperienced, and the training program to date has necessarily concentrated on start-up technical subjects for local APPY operations.

H. Accounting Operations

The evaluator reviewed three years of financial statements and interviewed the staff accountant and the office manager. A full review of the books and records is beyond the scope of this report, and should be carried out annually by a qualified auditor.

The accounting work being done by the UAPPY staff is much better than average for new farmer organizations, in that they are able to generate their own, reasonably adequate financial statements.

Table 8. UAPPY 12 Month Balance Sheets
 Compared as of June 30, 1987-89
 In Sucres

	1987	1988	1989
ASSETS			
CURRENT			
Cash	1,452	49,622	102,884
Banks	1,719,050	1,765,452	18,660,710
Accounts Receivable	4,182,915	14,966,464	97,518,125
TOTAL CURRENT	5,903,417	16,781,538	116,281,719
INVENTORIES			
Merchandise		5,290,967	5,687,206
FIXED			
Vehicles		6,605,000	6,605,000
Land			3,055,763
Machinery & Equipment	326,836	1,499,435	5,781,998
Tools		3,200	58,200
Office Equipment		34,249	177,317
Furniture & Miscellaneous		424,171	706,147
TOTAL FIXED	326,836	8,566,055	16,384,425
OTHER ASSETS			
Adjusted Charges		200,000	66,668
TOTAL ASSETS	6,230,253	30,838,560	138,420,018
LIABILITIES			
Creditors		432,500	53,166,636
CAPITAL AND MEMBERS EQUITY			
Unallocated Equity	6,230,254		
Donations		27,074,421	55,274,245
Current year net		1,965,375 *	28,117,857
Net from Prod. and Fin.		1,366,263	1,861,279
TOTAL CAPITAL AND EQUITY	6,230,254	30,406,059	85,253,381
TOTAL LIABILITIES AND EQUITY	6,230,254	30,838,559	138,420,017

* After distribution to members.

Table 9. UAPPY Operating Statements
 Compared June 30, 1987-89
 In Sucres

	1987	1988	1989
SALES:	2,662,411	23,562,110	109,369,995
LESS:			
Cost of Production	1,548,928	10,524,118	58,977,578
Administration	42,100	---	4,078,814
Cost of Sales	462,421	1,411,129	4,681,005
Purchase of Finished Prod.	---	6,548,502	7,265,754
Profit/Loss Distribution	---	---	6,102,862
Discounts on Sales	---	---	146,122
TOTAL EXPENSE	2,053,449	18,483,942	81,252,135
PROFIT FOR YEAR	608,962	5,078,176	28,117,860
PLUS:			
Profit from Finance and Production	233,621	1,366,263	1,861,279
TOTAL PROFIT 1988/89	842,583	6,444,439	29,979,139

Sales and Profits in Dollars

Sales	13,724	51,899	206,358
Total Profit	4,343	14,195	56,564
% Profit	31.65%	27.35%	27.41%
Exchange Rate - Sucres/Dollars	194/1	454/1	530/1

UAPPY needs to employ a reputable outside accounting firm to help develop a better inventory system, depreciation schedule, and individual member record system. The statement of year-end distributions to members on the operating statement needs to be improved, as does the equity section on the balance sheet. Member equity should be accounted for through issuance of equity certificates, and rules for pay-out of equity and interest on equity should be spelled out in the by-laws. It would be well to study revolving equity and simple base-capital plans. In a base-capital plan equity contributions are adjusted by usage, so that a farmer who delivers 10 tons of product would invest twice as much in the operation as the farmer who delivers 5 tons.

The evaluator applied ratio analysis to the existing financial statements, as summarized in Table 10. This kind of analysis will be useful to UAPPY management in the future, especially when they approach a financial institution for credit. Banks make their loan decisions and set their loan conditions based on these kinds of criteria. However, the ratio data and comments presented here are for discussion and training purposes only. They are of limited validity because: 1) they are based on unaudited statements which do not include depreciation or complete allocations of equity, 2) UAPPY has received grants which distort the earnings and equity picture, and 3) the ratio standards need to be adjusted in consultation with qualified Ecuadoran accountants who handle similar firms.

Overall, the ratio analysis shows that UAPPY is a financially healthy, going concern which could, with good management, eventually make the transition to loan funding from grant funding. Given the various challenges facing UAPPY, hopefully that transition can be gradual, as discussed below in the planning section. Ratio analysis should be performed periodically as a means of tracking financial progress over several years. Ratio analysis can be an early warning device for management.

Since UAPPY is in the position of paying taxes on part of its earnings, it is urgent that a qualified accounting firm familiar with Ecuadoran farmer organizations help UAPPY to utilize all available pass-through mechanisms to minimize taxes and thus maximize farmer benefits. UAPPY must face its tax situation immediately and learn to form its tax strategy each year several months before the end of the fiscal year. The cumulative effect of several years of neglect in this matter can be disastrous for a farmer organization. It should be understood by UAPPY management and board that the way their annual financial statements are structured and expressed will have important tax consequences.

Table 10. UAPPY Financial Ratios
1987-89 Statements for 12 Months
Ending on June 30.

FINANCIAL RATIO AND DEFINITION	FORMULA	STANDARD * 1987	1988	1989	COMMENTS	
					Note: Grant funding distorts the validity of these ratios.	
LIQUIDITY						
1. <u>Current Ratio</u> - Ability to pay bills in the near future.	$\frac{\text{Current Assets}}{\text{Current Liabilities}}$	< 2.0	---	38.8	2.19	1989 ratio good, need to review quality of receivables.
2. <u>Quick Ratio (Acid Test)</u> - Ability to pay bills in the near future if sales or collections are slow.	$\frac{\text{Current Assets}-\text{Inventory}}{\text{Current Liabilities}}$	< 1.0	---	26.6	2.08	1989 fair, again assuming good quality of receivables.
LEVERAGE						
3. <u>Debt to Equity</u> - Number of Units of Debt for Every Unit of Equity.	$\frac{\text{Total Liabilities}}{\text{Net Worth}}$	< 2-4	---	0.01	0.62	1989 good, but member investment is much lower than indicated due to grants.
4. <u>Total Liabilities/Total Assets</u> Percentage of Assets provided by creditors.	$\frac{\text{Total Liabilities}}{\text{Total Assets}}$	< 50-80%	---	1.4%	38%	1989 good, but member investment is much lower than indicated due to grants.
PROFITABILITY						
5. <u>Return on Sales</u> - Net Earnings as a percentage of sales.	$\frac{\text{Net Earnings}}{\text{Sales}}$	> 5%	32%	27%	27%	Excellent, but operating statement unclear on profit distributions to APPYs.
6. <u>Return on Assets</u> - Net earnings as a percentage of Assets.	$\frac{\text{Net Earnings}}{\text{Total Assets}}$	varies **	13.5%	20.9%	21.7%	Fair; less than current bank loan rates.
7. <u>Return on Net Worth</u> - Net earnings as a percentage of net worth.	$\frac{\text{Net Earnings}}{\text{Net Worth}}$	> 10%	13.5%	21.2%	35.2%	Excellent, net worth less than total grants to date, but undetermined portions of grants have been passed through to APPYs.
8. <u>Inventory Turnover</u> - Measures how many times inventory turns over in a year.	$\frac{\text{Cost of Goods Sold}}{\text{Inventory}}$	> 4.0	---	3.2	12.7	Good. Inventory down at year-end. Better to use average inventory figure than year-end figure.

* Standards vary between types of businesses and should be adjusted in consultation with local financial experts.

** Return on Assets should exceed annual interest rate paid on borrowed funds.

Computerization of the UAPPY accounting system would eventually provide management and board with more management information. It would also help UAPPY keep track of product volume and member payments which could double in each of the next two years. UAPPY should evaluate the Colombian SIAG system for IBM compatibles, as well as other systems that a local accounting firm might recommend. Locally available software training and hardware service are absolutely essential for successful computerization, and no system should be considered without these two ingredients. Since flights to Quito are frequent and inexpensive, Quito could be considered "local" in this sense.

The APPY accounting systems are well-kept but rudimentary, consisting of forms needed to report product handling and payment to UAPPY. It will be necessary to develop simple books for each APPY and train local accounting personnel from each APPY membership. It is important that each individual farmer be able to see a record of his product deliveries and payments to compare with his delivery receipts. It is also important for the local APPY leaders to have simple financial statements and annual projections and learn to use them. Having this information locally available, from local (and therefore trusted) personnel, will help to build the confidence of the farmers in the local APPY and lessen future pressures to distribute their funds prematurely.

Both UAPPY and the APPYs, like all expanding business, need to understand and use the idea of internal control in their accounting procedures. This means that responsibility for related transactions should be divided between individuals in such a manner that the work of one acts as a check on that of another. In making purchases, for example, the person who places the order should be different from the person who receives the merchandise, and a third employee should pay for it. The most essential and important accounting advice is this: learn and use internal control procedures.

Both UAPPY and the APPYs should give more thought to having more secure offices and some sort of safe or strong box for records and valuables.

I. Planning of Operations

As stated above, the transfer of the technical and social package by CIAT has been excellent. Clearly this is a result of the pioneering work done in Colombia, plus the analytical study of that work and the application of the findings in the early planning of the project by Dr. Romanoff.

The rapid growth of UAPPY has been well managed. This is due to the energetic and entrepreneurial leadership of the project and wise use of various institutional resources. The policy of limiting the growth of UAPPY to 20 APPYs is a good one, at least for the next few years. The newest APPYs need to do some "catching up" in the technical area, and the established APPYs need training to address the business concerns mentioned above. Product volume continues to grow rapidly, adding strain on the UAPPY system. Thus it is wise to cut off the creation of APPYs at a number which allows room for these activities plus some organizational consolidation.

The demonstration center currently being constructed by UAPPY will hopefully be thought of by the members as a business activity, principally as a central milling/storage site, and secondarily as a research and educational facility. The long list of potential activities proposed for the center should be examined carefully, and the ones not key to business survival and the consolidation of UAPPY over the next two years should be postponed or turned over to another compatible organization. This kind of long-term planning is appropriate for annual or semi-annual planning conferences which can be organized as a training activity for the Assembly.

Eventually the manager should submit a written annual business plan to the board of directors (or in this case, the Assembly, at least for the foreseeable future) for their approval. The board should learn to stay out of day-to-day management, playing a policy-making role and evaluating the performance of the manager. In the beginning of a new farmer organization, however, extra emphasis should be placed on eliciting full participation from all the local cooperatives in determining the future direction of the business. This is especially true in the case of organizations started "from the top." The eventual goal of having a relatively small (5-7 members) board making most policy decisions must be balanced against the early need for larger meetings such as the Assembly. Eventually the Assembly should meet only a few times each year. In fact, the UAPPY Assembly has held some marathon meetings in which planning has been discussed. The Assembly needs to operate on a two-part agenda. The business part of the agenda should be dealt with first, and an internal or "member affairs" part of the agenda should be dealt with second. The Assembly will get better service from their staff if they let them go home before moving on to the long discussions of a non-business nature.

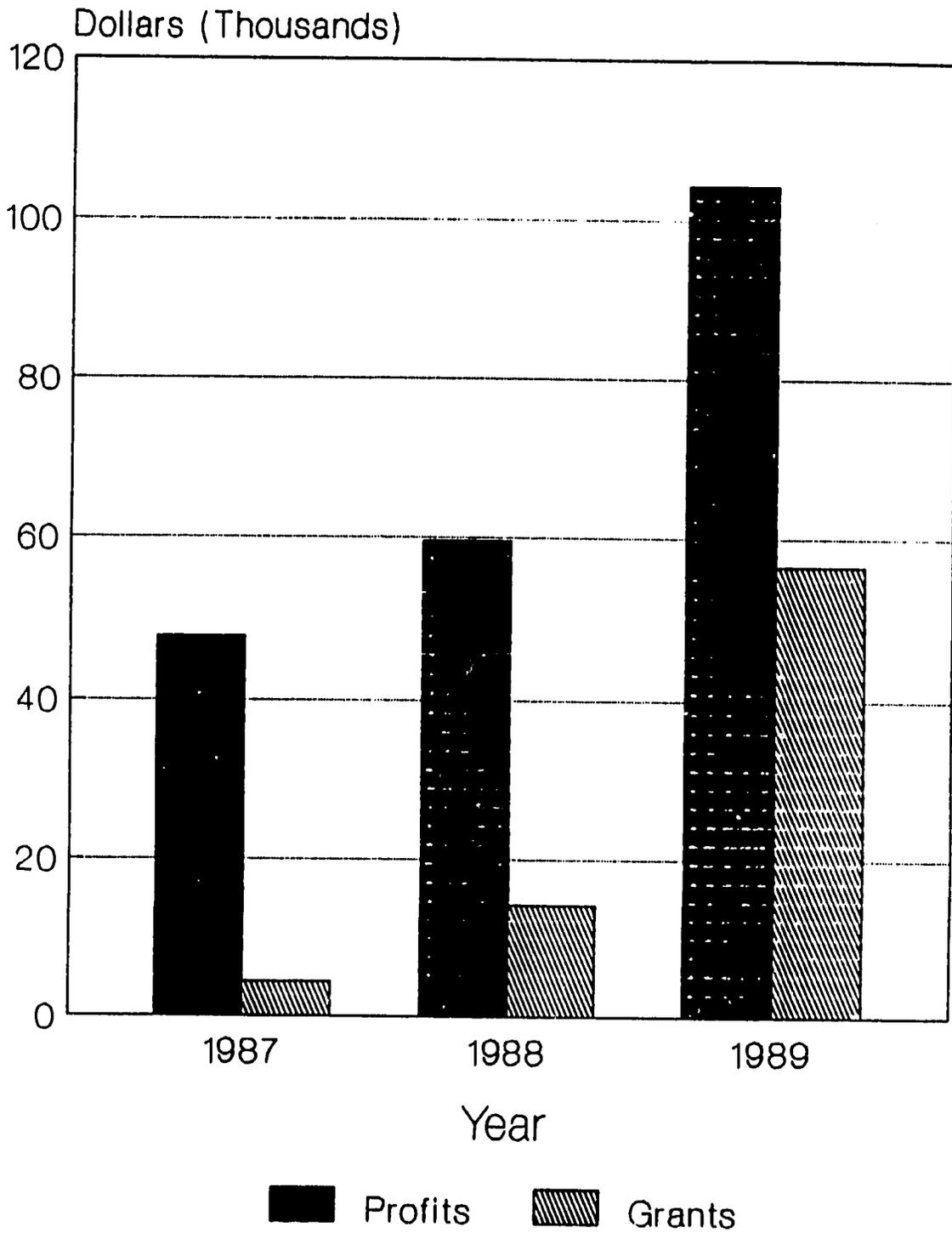
It should be noted that initially UAPPY was financed principally by grants (see Chart 9). This is appropriate in that the system was totally new and untried in coastal Ecuador. Yet the system had potential to demonstrate substantial economic benefits to small farmers and the local economy, which it has done in to an extent surprising even to the planners. The farmers themselves could not be expected to invest more than their labor and crops in the initial demonstration years. Ecuadoran financial institutions would not make loans to an UAPPY-type organization, and UAPPY may have to prove its ability to survive, at least in the medium term, before it qualifies for a commercial loan.

In addition to the various tasks of technical and organizational consolidation, UAPPY also faces the task of converting its administration and collective mind-set to loan funding instead of grant funding. Eventually this means having a business plan consisting of an overall strategy, an action plan for production and marketing, and the related, detailed multi-year financial projections and pro-forma financial statements. Ideally, given the various obstacles UAPPY still faces, the goal of independence from grants should be met in phases: one year of partial grant funding agreed to be the last, a year or two of soft loans, followed by sink-or-swim commercial borrowing. If this gradual disengagement from grant funding is not possible, then UAPPY will need much more business-oriented technical assistance and training to survive.

There is a dangerous possibility that UAPPY will be forced by lack of alternative funding to accept loans from the buyers of its product, who are the feed manufacturers. This kind of arrangement has led to the destruction of numerous farmer organizations by eliminating their major strength: the ability to bargain for price. If UAPPY accepts any credit from buyers, it should be under the following strict conditions:

- 1) No credit should be accepted for a term longer than the current production season.
- 2) Price should be negotiated first and separately from credit, or should be guaranteed to meet or exceed the prevailing industry price to other producers in the same season.
- 3) Interest paid, if any, should be no more than the prevailing normal bank rate.

**Chart 9. UAPPY Grants Received
and Profits in Dollars
1987-89**



J. Expansion Operations

UAPPY is facing the probable loss of the grant funding which fueled its rapid expansion at the same time it attempts to double its production and open a demonstration center. The newest APPYs will continue to need financing and training to survive and remain compatible with the older APPYs, which received greater subsidy and attention. These factors need to be balanced and managed, as discussed more specifically under the above points.

An essential key to continued good management of expansion will be providing adequate flour milling services. It is beyond the scope of this report to prescribe how this should be done in the upcoming season, except to say that it must be planned for well ahead of time. In a worst case scenario, UAPPY should be prepared to preserve and enhance this function at all costs, and the accounting function should be considered almost as important.

UAPPY should begin using the tool of break-even analysis alongside its annual financial projections. Processing businesses are extremely sensitive to volume changes and this tool will help UAPPY determine how much to centralize milling operations and how much new production or new members may be needed to comfortably carry overhead and equipment costs.

As mentioned above, the demonstration center should be looked upon as a business activity and its non-essential activities should be subsidized from outside sources, if at all possible.

K. Training Operations

As stated above, the training function has been well carried out in the technical area, and needs to be enhanced with the addition of accounting, financial planning, management, and principles of cooperation.

Overall

The comments and recommendations contained in this chapter are summarized in Table 11, called the ACDI Report Card. As stated therein, UAPPY has made excellent overall progress in a short time, much better than one would expect. Its technical and managerial needs are doable and known. The organizational consolidation, planning, and accounting needs of UAPPY are typical of new small farmer organizations.

Table 11. ACSDI REPORT CARD: UAPPY, MANABI, ECUADOR. MAY 1989.

SUBJECT	RATING		BENCHMARK * DIFF.		REMARKS	
	%	GRADE	%	GRADE		
A. Organization - UAPPY staff	92	A-	75	C	+17	Staff members very highly motivated and work unselfishly. Local institutions(MAG + INIAP)have supplemented and helped train staff.CIAT/FUNDAGRO needed at least 2 more years.
B. Organization - UAPPY Members Assembly	77	C+	75	C	+2	Meetings well attended and organized. Commissions need training and orientation to work with staff.Directors need training in principles of farmer cooperation, and more managmt. inform.
C. Organization - APPY local level	75	C	75	C	--	75% of APPY's under 2 years old,training in technical and organizational areas simultaneously is difficult.APPYs need financial planning and mgmt training tailored to scale and age.
D. Organization - Institutional Relations	95	A	75	C	+20	Textbook mobilization and utilization of public and international ag.development resources. Need plan for local staff development after CIAT/FUNDAGRO advisors withdrawn in '91.
E. Legal Basis - UAPPY	80	B-	75	C	+5	Personeria approved.By-laws need provisions for capital management, member entry-exit,inheritance or transfer of membership, etc.
APPY	70	C-	75	C	-5	Personeria approved for 9 of 16. By-laws need above improvements. Land titles needed by 7 groups.
F. Operations - Technical	95	A	75	C	+20	Plant construction, chipping machinery, training and coordination all excellent.Flour milling needs sealed mills and improved powersource.
G. Operations - Marketing	97	A	75	C	+22	UAPPY opened new market with shrimp feed manufacturers. Prices, quality, coordination, payment system all excellent.Need to pursue product diversification, keep UAPPY effective bargainer.
H. Operations - Accounting UAPPY	85	B	75	C	+10	Internal statements adequate.Need improved internal controls, annual audit,tax filings, mgmt. info,computerize, secure office.
APPY	70	C-	75	C	-5	No books.Good records as reporting center to UAPPY. Need more acctg. information for members to avoid decapitalization.Need improved internal controls.
I. Operations - Planning	87	B+	75	C	+12	Excellent management of rapid growth,good adaptation of technical and social package from CIAT,good limit to growth(20 groups optimum). Need business-financial plan based on loans instead of grants, and periodic planning conferences.
J. Operations - Expansion	82	B-	75	C	+7	Demonstration center needs continued partial subsidy and clear separation of public/private functions.New APPYs need training and financing. Need expanded flour milling capacity.
K. Operations - Training	85	B	75	C	+10	Initial emphasis on technical training for start-up must be followed with added emphasis on accounting, financial planning, management and principles of cooperation.
OVERALL AVERAGE	83.8	B	75	C	+8.8	Excellent progress in short time.Technical and management needs doable and known. Organizational consolidation and accounting needs are typical of young small farmer organizations.

* Benchmark rating would be for a hypothetical three-year-old small farmer organization.

50

V. POSTSCRIPT: STAGES IN THE SMALL FARMER ORGANIZING PROCESS

When organizing small farmers, it is best not to re-invent more than one wheel at a time. The organizing process is difficult enough, so the technical package should have been worked out elsewhere, hopefully requiring no more than some adaptation and streamlining. Sometimes the technical package is already present in the area, but this has not been the case of the cassava project in Ecuador.

The first wave of farmer associations to test the technical package are the biggest risk-takers (in this case, the north coast Colombian farmers). They had no choice but to follow an unknown organizing path at the same time they were risking their crop on an untested technology. The second wave of farmer associations, in this case the coastal Ecuadoran farmers, still needed some subsidy to start their organizations and demonstrate the technology, but the package was mostly complete. Although the technology may be tested elsewhere, small farmers are very hard to convince without having seen the technology and lived with the organization, both of which are very new to them. Experienced farmers from the first wave (in this case Colombian farmers brought to Ecuador by CIAT briefly as technical advisors and promoters) can make quantum leaps in building farmer understanding and acceptance in a short time.

The third wave of farmers is the most interesting, assuming they appear. They may be from the next valley over, outside the natural boundaries of the second wave group. They will appear unexpectedly at the home of a second wave leader, and tell a story like this: We heard about what you are doing, and we think we can afford to duplicate it, but we would like to talk to you about the finer points and possibly get your advice on finding some equipment and supplies.

Often the third wave does not look quite right to be technical advisors to the first and second waves. The members may not all be part of the "target" group of small farmers. Usually the outside advisor recognizes this as a side-effect of success. Assuming most of the members are farmers, the advisor's best strategy is to give technical support to a new process of spontaneous farmer-to-farmer activity. The peer group (farmer-to-farmer) promoters can help new groups improve their focus on what kind of participants they need to achieve a balance of dynamic leadership and homogeneity. With more focus on the business itself (rather than politics or community boosting) new groups can gradually change their composition to involve a higher percentage

of genuine farmers. The third-wave leaders who fall by the wayside should be recognized for their catalyst role, if not their staying power.

The third wave groups may have mixed goals and non-homogeneous memberships, but they can be very determined. If they perceive that the technology is refined enough and their local conditions are appropriate, then they can evoke an extent of "bootstrap" self-capitalization from their members that will surprise many observers. It should be recognized that this kind of faith in the future was bought and paid for by the risk-taking behavior and resource scrounging of the first and second wave farmer groups and their supporters. At this point the critics of grant funding are silenced: the third wave usually only wants information and possibly loans, not grants.

After the appearance of the third wave, the success and survival of the overall movement of small farmer associations will depend on continuous improvement of their technology, management, and ability to survive market swings. These are tall orders, but they are the same ones for all farmers.

One lesson for the outside advisors is to place the second wave of associations near "the next valley over" whenever possible. Another lesson, perhaps the hardest learn, is in knowing when to disengage, to move on like Johnny Appleseed.

FOOTNOTES

1. Cock, James H., Cassava, New Potential for a Neglected Crop, p. 12.
2. Cock, James H., same as note 1, p. 9.
3. Montalbo, Alvaro, "La Potencia de la Yuca y Otras Raíces Indígenas de América," in Romanoff and Toro, La Yuca en la Costa Ecuatoriana y sus Perspectivas Agroindustriales, p. 22.
4. Maugle, Paul, "Utilización de la Yuca en la Alimentación de Camarones en Ecuador," in Romanoff and Rodríguez, eds., El Lanzamiento de la Yuca en la Costa Ecuatoriana.
5. Chaves, Napoleón, Flor M. Cárdenas de Mesa, and Francisco Hinojosa, "Condiciones para el Establecimiento de Plantas de Secado Natural de Yuca en la Provincia de Manabí: Sondeo INIAP-CIAP," in Romanoff and Toro, see note 3, p. 42.
6. See note 5, p. 46.
7. Conversation with Steven Romanoff and Carlos Egúez, May, 1989.
8. Conversation with Steven Romanoff, May, 1989.
9. Chaves, et. al., see note 5, p. 47.
10. Cock, James, and J. Lynam, "Research for Development," p. 1.
11. See note 10, p. 2.
12. See note 10, p. 3.
13. See note 10, p. 7.
14. Ospina, Bernardo, "El Secado Natural de la Yuca para Alimentos Balanceados," in Romanoff and Toro, see note 3, pp. 86-88.

15. See note 14, p. 87.
16. Conversations with Steven Romanoff, May, 1989.
17. Dunn, John R., Tracy L. Kennedy, and Randall E. Torgerson, "Cooperatives Best Hope for Farmers' Economic Survival: Senate Study," in Mary Kay Bidlack, ed., American Cooperation 1988.

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