

## **Report on Trip to Costa Rica**

**May 23 – 30, 1999**

USAID Grant No. LAG-G-00-97-00002-00

SM-CRSP Project *Decision Aids for Integrated Nutrient Management*

### **Traveller:**

Frank Smith – North Carolina State University

### **Rationale and Objectives:**

Travel to Costa Rica was for purposes of contributing to the mid-term evaluation of the project based on experiences at the Costa Rica site. In collaboration with local leaders, procedures and systems were developed to document progress toward project objectives. The trip report is intended to provide new information on project activities and unexpected problems based on new field data on the evolution of the Costa Rica site. Meetings were held with stakeholder groups including farmers, farm organizations, fertilizer suppliers, researchers, government and non-government organizations, and extension specialists. The new information obtained is intended to assist with development of the DSS model and the subsequent technology transfer strategy through the project's extensive evaluation network.

### **Itinerary:**

- May 24 Met with Alfredo Alvarado to make adjustments in the itinerary, made appointments for some additional meetings and discussed issues and methods for the mid-term evaluation. Also met with researchers of the Universidad de Costa Rica's, Centro de Investigaciones Agronomicas to get the perspectives of research partnerships in the developmental research of the project, and with Ruth de la Asuncion Romero, Deputy Director, Centro de Investigaciones en Tecnologia de Alimentos (CITA)
- May 25 Met with government leaders:  
Ing. Juan Ignancio Quiros, Director of the Palmito Program within the Consejo Nacional de Produccion (CNP)  
Salvador Monge Fallas (Executive Director) and Hernan Gonzales Mejia (Deputy Director), Secretaria Ejecutiva de Planificacion Sectorial Agropecuaria (SEPSA), Ana Hazel Perez, Promotora del Comercio Exterior de Costa Rica (PROCOMER)
- May 26 Traveled with Eduardo Espinosa to La Victoria in the Sarapiquí region in the Huetar Norte province of Costa Rica. There we met a small group of palmito producers of the Asociacion Agroindustrial de Palmito de Sarapiquí (AGROPALM). The association currently has 520 members with a total of 2,500 ha of palmito production.  
Traveled to Guapiles to meet with farmers and officials of the palmito growers cooperative, COOPROPALMITO. The cooperative has 217 members with a current capacity for 640 ha of palmito production. Also met with Dr. Jorge Mora, a leading figure in palmito research.
- May 27 Visited the 'Los Diamantes Experimental Station (Ministry of Agriculture) for meetings with Carlos Arroyo and Antonio Bogantes. Unfortunately Bogantes was not available to meet. In the afternoon, we met with Clemente Zamora, Federico Rojas (President) and 30 producers of palmito at the Expo-Pococi in Guapiles who are forming a national organization to represent the interests of palmito growers, Camar Nacional de Productores de Palmito (CANAPPA). Also met with Salomon

Weinstok, president of a small palmito export company (Palmitos de Guapiles) which had lost money shipping fresh palmito to specialty markets (restaurants) in the U.S. Returned to San Jose

May 28      Compiled information from various sources and began writing a draft of the mid-term report.

May 29      Completed draft of the mid-term report

May 30      Returned to the U.S.

### **Mid-Term Review Report: Costa Rica**

*Prepared by Frank Smith with assistance from Alfredo Alvarado and Jot Smyth*

#### **Overview of Market Conditions for Palmito**

The market conditions for palmito have change dramatically since the project site selection (Osmond, et.al., 1997) and the baseline study (Alvarado, et.al., 1998). High prices for heart-of-palm ('palmito') fueled the rapid expansion of production in the period 1990-1997. Since 1997, however, prices have declined approximately 50% and the rural sector is facing a serious social problem. The National Production Council (CNP) estimates that 2000 farm families are suffering the effects of a total elimination of their principal source of income. The major fertilizer suppliers, FERTICA and ABOPAC, report only minimal sales of fertilizers to palmito producers. The majority of producers are minimizing costs of production by relying on the residual effects of previous fertilizer applications. The current crisis in palmito markets emphasizes the importance of economic variables in decision-making. This work contributes to a more complete picture of farmer decisions under both boom and economic stress conditions. In 1998 exports of palmito grew 14.5% over 1997, reaching 12,000 metric tons with a total value of 24 million dollars and generating employment for 7000 persons. In 1998, 58% of the exports were sent to France and the balance to 23 other countries including the U.S. which received 1131 metric tons of palmito from Costa Rica (CNP, 1999).

The current crisis in the market was not unexpected. Similar cycles of boom and bust have been observed before in the same region with banana (Viales, 1998). In 1998 farmers were aggressively expanding palmito, while expressing concerns as to the stability of future palmito prices. Unfortunately, the concerns of farmers about future prices were warranted. Prices paid to producers dropped approximately 50% in the period November 1997 to August 1998 and have not yet shown signs of recovery. Poorly developed marketing arrangements have left small farmers with few if any buyers of their product. The president of the National Growers Association estimates that of the 12,000 ha of palmito, approximately 4,000 ha are now out of production. Government officials at SEPSA estimate that with current market demand there are 4000 ha of excess production capacity in palmito which should be reallocated to other agricultural activities.

Given the present crisis in palmito markets, there is considerable discussion among farmers, grower associations, industry representatives and government leaders about the factors contributing to the decline in product prices:

- 1) U.S. led initiatives to promote alternative crops in Bolivia, Equador and Peru have contributed to over-supply;
- 2) Costa Rica has contributed to the over-supply by freely giving technical assistance and training to others without regard to the market consequences;

- 3) A small number of large processing industries have restricted their buying of palmito to gain market share and greater domination through vertical integration;
- 4) The crisis is principally a result of poorly developed organizations for production and marketing;
- 5) The government free market policy framework leaves small farmers vulnerable to natural market price movements and industrial cartels; and
- 6) Palmito processing is overly concentrated in the traditional export market of canned, acidified product and not effectively exploiting market growth opportunities in fresh and non-acidified products.

With regard to the future prospects for palmito some argue strongly that the potential in local and international markets is excellent. They say the current crisis is transitory and can be overcome with appropriate short-term remedies, long-term product diversification, and marketing. Others are more pessimistic and hedging their investments in palmito. Their concerns are founded on the difficulty of bringing a non-traditional product to international markets in sufficient scale and quality to secure a profitable position in those markets.

#### **Current Values for Farm and Industry Production of Palmito**

The area of palmito production has continued to expand in the period 1994-1998 (Table 1).

Table 1. Estimated area and production of heart-of-palm (pejibaye) in Costa Rica

<b>YEAR</b>	<b>AREA</b>	<b>PRODUCTION</b>	<b>GROWTH</b>
	ha	million palmitos	%
1994	3,926	33.3	
1995	5,749	48.7	46.2
1996	7,367	62.4	28.1
1997	10,167	86.2	38.1
1998	12,718		20.0

Sources: Programa Nacional de Palmito (1994-1996), DEMASA (1998), CNP (1999)

The structure of production is presented in Table 2. Clearly, many small farmers are involved in palmito production with more than 86% of producers having less than 5 ha of production. They account for 38% of total land area in production.

Table 2. Distribution of total land area under palmito production and producers in Costa Rica among different size categories.

<b>SIZE</b>	<b>LAND AREA</b>	<b>% OF TOTAL</b>	<b>PRODUCERS</b>	<b>% OF TOTAL</b>
ha	ha		number	
< 5	4,140	38	2,246	86
5 to 20	1,288	12	317	12
20 to 50	938	9	31	1
>50	4,639	42	26	1
Total	11,005	100	2,620	100

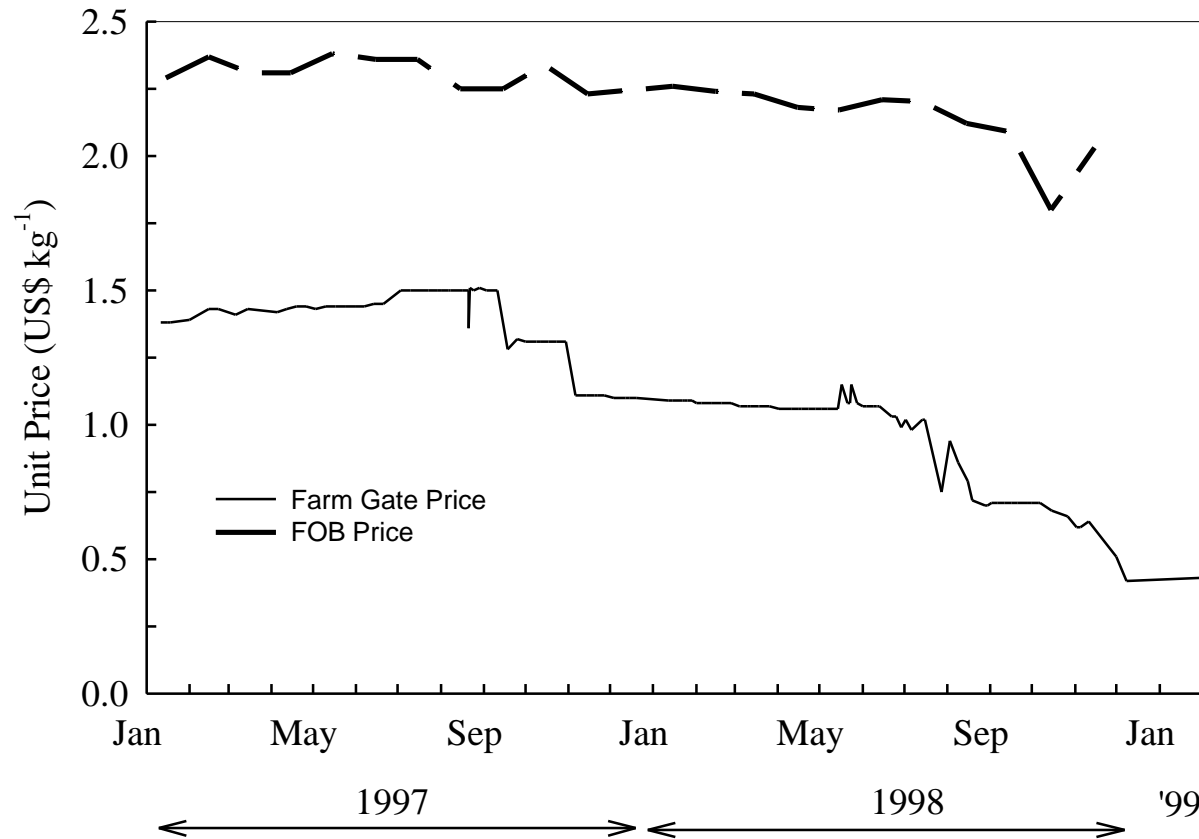
Source: Agriculture Census, CNP 1998

Average yields of heart-of palm, disaggregated by age of plantation are presented in Appendix Table 1. Area in palmito production and number of farmers disaggregated by region and subregion within the Huertar Norte region are presented in Appendix Tables 2 and 3,

respectively. The CNP estimates that for 1999 industrial processing of heart-of-palm will utilize only 50 percent of installed industrial capacity (see Appendix Table 4).

**Product Prices**

The average price paid to farmers for palmito has declined sharply since November 1997. Figure 1 contains the average prices for cooperative members at COOPROPALMITO (January 1997 to February, 1999). The actual price to farmers varies according to quality of product, the buyer and the terms provided in contract or negotiated market agreements. The average price for processed palmito in the international market has remained relatively stable over the same period.



**Figure 1.** Comparison of prices (in US dollars/kg) paid for palmito by COOPROPALMITO to farmer cooperative members (farm gate price) with the export prices for processed palmito (FOB price) during the period of January 1997 – February 1999. Farm gate prices, in colones/palmito, were converted to US\$/kg assuming 45 palmitos/box with 9.6 kg of palmito per box (CNP, 1999).

Farmers sell to industrial processors, intermediaries and directly to consumers at local markets and road-side stands. Because of limited market demand, overall production in the area has fallen by approximately 50%, from 100,000 palmitos/week to 50,000 palmitos/week. The farmers associated with the AGROPALM cooperative report that the only industry currently

buying their product is ALPIGO in San Carlos, 65 km from la Victoria. The industry grades the quality of the palmito it receives and pays differential prices according to quality (35c/palmito for first class; 25c/palmito for second class; and 10c/palmito for third class). Farmers claim that the industry classification is too subjective and that farmers are left with no alternative than to accept the abusive grading/pricing. There are approximately 15 intermediaries operating, in the canton, Sarapiquí. The farmers report that the processing industries prefer to deal with intermediaries which use floating prices rather than with the cooperative which attempts to negotiate fixed prices. Finally the farmers of AGROPALM sell fresh and semi-processed palmito (cleaned, cut in plastic bags) directly to consumers in local markets.

Until February 1999, all sales at COOPROPALMITO were made to the largest national palmito processor, DEMASA. This arrangement was terminated by DEMASA after COOPROPALMITO obtained a loan from the Costa Rican government (Fondo para Reconversion Productiva) to construct its own plant to process palmito. Farmers essentially have no place to sell their palmito and are hoping that once the new plant becomes operational, they will be back in business. COOPROPALMITO has contracted for technical assistance in commercialization of their product, but the new venture has no firm marketing agreements at this time and without samples or business record the start-up will be problematical.

The average price of processed palmito has declined over the period 1997-1998 by 8.16% (Figure 1). This contrasts with the average price decline of 50% for the semi-processed product at the farm. Costa Rican export data for palmito including volume, value (FOB), disaggregated for receiving countries is presented in Appendix Table 5. Despite some reductions in unit prices of exports, volume is up 14%. The number of exporting enterprises is large signifying continuing business opportunities now and in the future (Table 3).

Table 3. Palmito exporting enterprises in Costa Rica during 1998.

<b>ENTERPRISE</b>	<b>ENTERPRISE</b>
Derivados de Maiz Alimenticio, S.A.	Desarrolladora y Comercializadora
Tuberculos de Costa Rica, S.A.	Compania Exportadora de Productos Agricolas
Palmito de Costa Rica, S.A.	Industrias Sanso, S.A.
Grupo Agroindustrial Alpizar Gonzalez	Grupo Avalon de San Jose, S.A.
Agroindustrias Cabiros, S.A.	Escuela de Agricultura de la Region
Alimport, S.A.	Mr. Agro, S.A.
Emanuel Amador Munoz	Malco Internacional, S.A.
Cia. Agricola Linea Vieja, S.A.	Paisal, Sociedad Anonima Laboral
Palmitos y Conservas Amador, S.A.	Importadora y Exportadora Cecna, S.A.
Tico Chaal Agroindustrias, S.A.	Asociacion de Desarrollo Agricola P
Alimentos Naturales Alin, S.A.	PROCOMER
Mac Palm, S.A.	Exportaciones Amador, S.A.
Coservas del Valle, S.A.	Palmitos de Guapiles, S.A.
Exportadora Industrial, S.A.	Mario Sauma Alvarez
The Ark Achiote de Costa Rica, S.A.	Semillas Piba, S.A.
Agricola Industrial Quiros Murillo	Ganadera Chayva, Ltda.

It is interesting, that farmers report that the price of land in the region has remained relatively stable at 1.5 million colones/ha. However, having a stand of palmito does not add to the value of

land and there were some farmers who claim that local buyers prefer cleared land without palmito.

### **Farmer, Industry and Government Responses to the Palmito Crisis**

There is general consensus that the long-term solution depends on effective organization of production and marketing. The primary responsibilities will fall on growers and industries. The government has a limited role in ensuring fair and free markets and in providing institutional support for research, extension and education.

A primary strategy of both farm producers and industry processors is cost reduction. As a consequence, production capacities are being degraded as plants, weeds and soil nutrients are left unmanaged. Farmers are not applying chemical fertilizers or herbicides. Some farmers (about 15%) continue to prune palmito, not for sale but only to manage the mother plants which would otherwise grow too tall. Any weed control in the fields is manual. The knowledge being gained in Costa Rica with palmito and how farmers respond to changing market conditions is critical to the larger project goal of modeling the interaction of nutrient and socio-economic variables for use in decision making in other crops and in other socio-economic contexts.

Given the falling sales volumes and prices in palmito, small farmers are relying more heavily on alternative income generating activities including cattle, tubers, banana and off-farm employment (25%). The reduction in production of palmito has had proportional effects on reductions in contract labor. Labor for cutting and hauling palmito is paid according to a piece rate of 5c/palmito for cutting and 2c/palmito for hauling. Cutters average 800 palmito/day earning on-average 4000c/day. Haulers average 2000 palmito/day earning on-average the same 4000c/day. Families depending on this labor income are suffering.

The large industries are not immune to the market factors. They are cutting costs through various means including layoffs in research and field personnel. They are selectively buying palmito, principally larger producers and intermediaries. They are meeting with government officials to lobby for government assistance with marketing opportunities. Industries are also cutting back on fertilizer applications in their own fields.

The government is in the process of developing goals and strategies to reestablish and expand the market for palmito (CNP, 1999). Among points under consideration are the the following:

1. Continued restructuring of existing debts in the palmito sector in cooperation with private banks.
2. Elimination of the import tax on packing materials used for processing and packing palmito as well as a selective sales tax on palmito in the local market.
3. Extension of social services to the distressed palmito sector.
4. Support for promotion of palmito and the work of the National Palmito Program.
5. Establishment of a system for grading the quality of various palmito products.
6. Additional collaboration between universities, research institutions, non-government organizations and industry for research in production, processing and marketing.

### **Collaboration in Developmental Research**

Conversations with research collaborators indicated a high level of commitment to the project. They expressed a keen interest in knowing more about the overall project and how the local research would contribute. Given the unavoidable difficulties of working in a developing country, the project workload is considered to be heavy and a new full-time coordinator has been added to better manage the workload. The researcher collaborators balance their project work with other research and teaching commitments. Email continues to be slow and it is frequently interrupted (apparently, the local infrastructure for electronic communications is affected by rain,

traffic congestion on the lines and local servers). Despite these difficulties, nine out of eleven planned projects are currently active. The other two will be initiated in 1999. Preliminary results have already been delivered to the appropriate leaders of other project components.

Local researchers have expressed their satisfaction with the nature of the international collaboration and the opportunities to gain new knowledge and experience with the following methods and procedures:

1. Use of litter bags to measure mineralization rates for plant materials;
2. Use of soil columns to estimate Al-complexation by lime and plant residues;
3. Techniques for P availability determination;
4. Use of suction lysimeters to monitor soil solution composition with profile depth;
5. Sampling depths for mineralization of plant residue; and
6. Literature exchange used by students at UCR and other professionals interested in the subjects.

In addition, new ideas/suggestions for consideration and possible inclusion in the development research plan were provided by the Costa Rican collaborators:

1. CIA and NGO professionals expressed interest in studying the beneficial effects of organic material such as chicken manure as a nutrient source available to small farmers. This is especially relevant now in Costa Rica because most small farmers are not using chemical fertilizers but some are using organic fertilizers. The substitution or interaction effects of such organic supplements in a working model is a matter of keen research interest. They were very interested in the project's work in Mali on manure collection, compost management and compost application.
2. Genetistists Jorge Mora and Carlos Arroyo foresee a future of crop improvements with spineless peach palm varieties. Under this scenario, plant densities would be expected to increase from approximately 5000 plants/ha to more than 10,000 plants/ha. The technical package for fertilization and crop management would need to be revised for the new genetic material. In their own fertilization trials in high density pejobaye stands, they are applying 7 to 9 sacks (46kg) of 18-5-15-6-2. More coordination between the research for nutrient management and genetic improvement would be welcome.

### **Collaboration for Decision Support, Technology Transfer and Training**

There continues to be strong support for the concept of a decision support system. Looking forward, the users of the decision tools will include:

1. Costa Rican and Central American agronomists with field experience and knowledge or access to computers;
2. Technical advisors of farmer cooperatives and associations;
3. Professionals working for large commercial firms;
4. Educational and research institutions; and
5. Others.

There are significant impediments to collaboration that were not apparent at the time of the baseline study which must be overcome to achieve extensive collaboration and technology transfer. Concerns are the following:

1. The PITTA (Peach Palm Agricultural Research and Technology Transfer Program) has not performed as expected in coordinating the various components of the national palmito program. Institutions including CIA have lost confidence in the PITTA. In part, the problem appears to be a failure on the part of the PITTA to make funds available to support planned activities. As an alternative, producers, industry and government officials have created a

national program for palmito which is expected to achieve the original goals of the PITTA plus the marketing issues.

2. There is a new level of awareness to the value of intellectual property. Research and extension institutions in Costa Rica are becoming increasingly dependent on the income they generate through user fees and clients paying for technical assistance and research. Figure 2 shows the increasing levels and diversification of funding within CIA. One benefit of this policy is that research institutions such as CIA are working with many more clients than before (Figure 3). With cooperation of producers research trials are now using many more sites. The consequences for small farmers with limited capacities to pay for technical assistance however, are troubling. The industries are unwilling to share critical information.

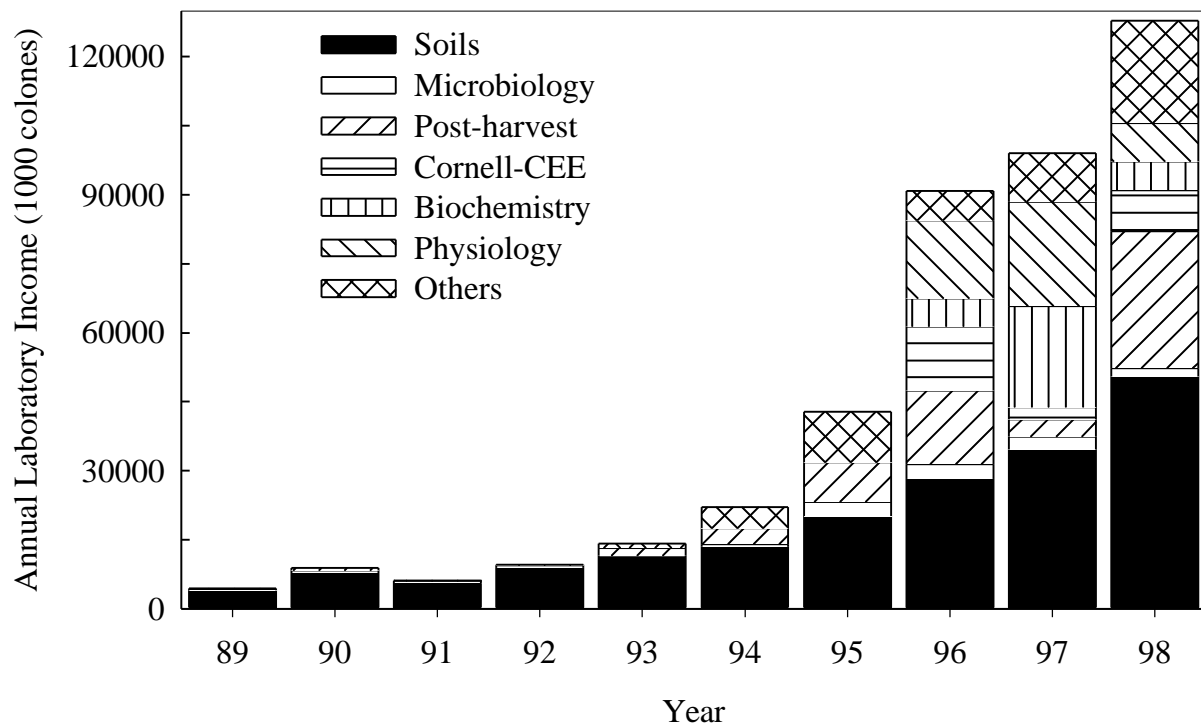
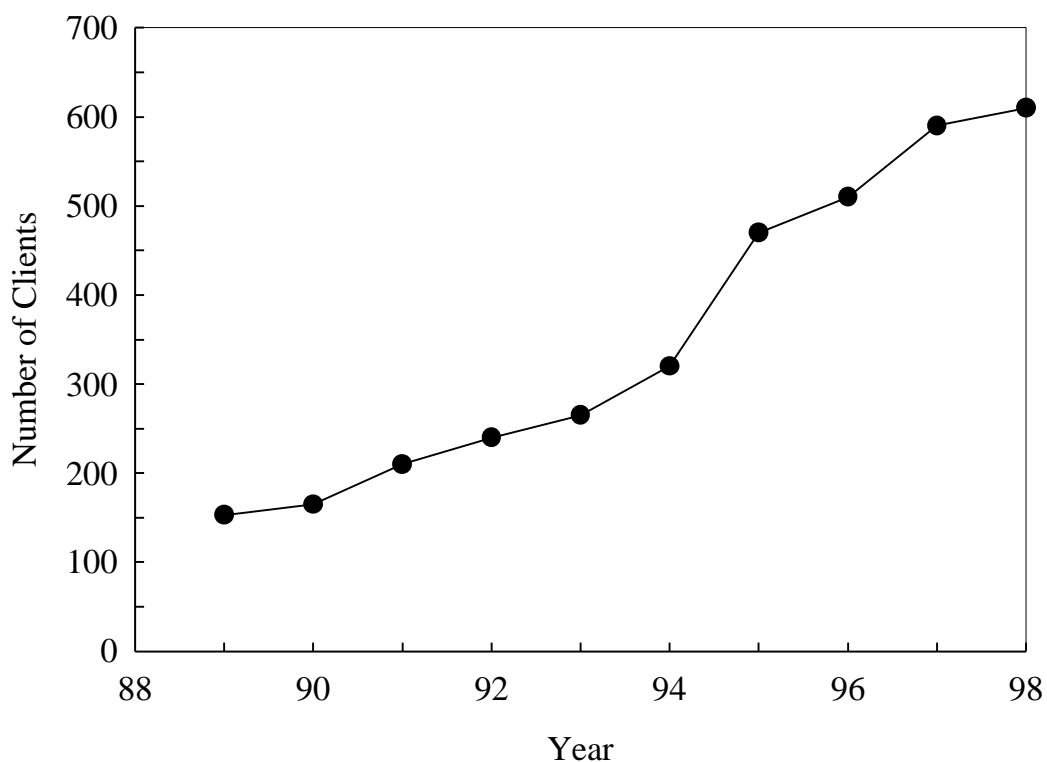


Figure 2. Income generated at the University of Costa Rica by laboratory technical assistance and research for clients.

Public institutions in Costa Rica continue to be leaders in training related to palmito production and processing. Training serves both national and international clients. UCR has M.S. and Ph.D. programs in soil science and sustainable agriculture with a regional mandate and scholarship support. Since 1990, one hundred forty one students have enrolled in the postgraduate degree programs. Enrollments disaggregated by year and gender are presented in Appendix Table 6. Non-degree training is provided by INA throughout the country. Recent INA (non-degree) training relating to palmito production are shown in Table 5.



**Figure 3.** Number of clients served by the Center for Agronomic investigations at the University of Costa Rica during the period of 1988 – 1998.

Table 5. Non-degree training courses in heart of palm production provided by INA.

<b>REGION</b>	<b>1994</b>	<b>1995</b>	<b>1996</b>	<b>1997</b>	<b>1998</b>
Brunca	3	3	3	5	7
H. Atlantico	2	4	4	3	3
H. Norte	4	4	5	7	3
Total	9	11	12	15	13

Source: Instituto Nacional de Aprendizaje, Nucleo de Formacion Y Servicios Technologicos Agropecuarios. The average number of trainees per course is 15.

In conclusion, the experiences of Costa Rica with the development of the nontraditional crop, palmito, highlights the interconnected issues of soil nutrient management, organization of production systems and marketing. The lessons learned in Costa Rica are also relevant to other major producing countries of palmito (Bolivia, Brazil, Ecuador and Peru) and to the development requirements of other nontraditional products.

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## Appendices

Appendix Table 1. Average heart-of-palm (palmito) yields in Costa Rica for different ages of peach palm plantations.

<b>Plantation Age</b>	<b>Palmito Yield</b>
Years	units ha <sup>-1</sup> year <sup>-1</sup>
1 – 7 months	2,500
8 – 24 months	7,000
> 2 years	11,000

Source: CNP, Huertar Norte Region, 1998.

Appendix Table 2. Distribution of land area and farmers in peach palm for palmito production among regions of Costa Rica

<b>Region</b>	<b>Land Area</b>		<b>Farmers</b>	
	ha	%	number	%
Huertar Norte	9,168	72	1,983	68
Huertar Atlantica	2,450	19	424	15
Brunca	861	7	469	16
Chorotega	239	2	20	1
Total	12,718	100	2,896	100

Source: CNP, Huertar Norte Region, 1998.

Appendix Table 3. Distribution of land area and farmers in peach palm for palmito production among subregions within the Huertar Norte region of Costa Rica

Region	Land Area		Farmers	
	ha	%	number	%
Sarapiquí	4,000	44	655	33
Upala	2,677	29	1,037	52
Pital	1,836	20	129	6
Fortuna	455	5	69	4
Guatuso	200	2	93	5
Total	9,168	100	1,983	100

Source: CNP, Huertar Norte Region, 1998.

Appendix Table 4. Projections on palmito processing capacity in Costa Rica for 1999.

Installed Capacity		Processing		Surplus Capacity	
Palmitos	Boxes	Palmitos	Boxes	Palmitos	Boxes
		----- Units/day -----			
363,000	8,066	183,000	4,066	173,745	3,861

Assuming processing plants work 300 days/year; mean daily palmito harvest is 356,745 units; 45 processed palmitos per box (i.e. 1 box contains 9.6 kg palmito).

Source: CNP, Huertar Norte Region, 1998.

Appendix Table 5. Volume, value and destination of palmito exports from Costa Rica during 1997 – 1999.

Country	1997		1998		1999 <sup>a</sup>	
	Weight	Value	Weight	Value	Weight	Value
	kg	US\$	kg	US\$	kg	US\$
U.S.A.	1,249,908	2,797,493	1,360,966	3,056,424	388,407	790,898
Canada	733,225	1,703,424	785,482	1,662,933	134,524	251,384
France	6,186,100	14,169,095	6,481,123	13,782,082	1,468,096	2,599,140
Spain	1,201,808	2,663,888	1,641,333	3,392,270	253,872	509,131
Germany	152,337	380,180	109,661	260,134	60	--
Italy	148,990	367,020	197,455	471,080	21,116	42,036
Belgium	147,850	355,838	181,836	497,192	15,500	46,538
Netherlands	22,050	23,159	57,375	145,125	1,076	3,000
Denmark	--	--	39,180	89,242	20,212	36,750
Great Britain	29,780	72,430	40,920	97,280	--	--
Slovakia	112	371	--	--	--	--
Switzerland	--	--	13	--	--	--
Israel	175,274	442,590	392,556	745,994	79,763	132,300
Lebanon	19,245	46,170	19,305	44,756	19,620	42,375
Morocco	19,800	42,500	58,000	120,480	19,037	33,700
Japan	12,540	35,340	14,620	37,860	21,309	47,040
Taiwan	140	--	--	--	--	--
Bangladesh	--	--	--	--	18,900	29,250
Argentina	78,800	140,700	19,800	44,550	--	--
Barbados	--	--	899	1,860	--	--
Brazil	--	--	45	--	--	--
Chile	400,762	1,051,727	418,916	1,093,236	39,513	106,733
Colombia	24,600	53,725	16,700	40,790	--	--
Dom. Rep.	--	--	--	--	169	130
El Salvador	41,188	76,886	55,002	96,505	27,813	49,820
Guatemala	--	--	1	--	--	--
Guadalupe	--	--	14	20	800	850
Honduras	482	1,392	--	--	--	--
Mexico	48,741	123,291	127,583	307,783	--	--
Nicaragua	13,633	8,772	2,525	5,690	328	1,964
Panama	10,407	26,770	8,202	19,066	2,625	5,650
Uruguay	--	--	11,820	11,400	--	--
Venezuela	244,791	538,222	129,227	235,078	51,459	73,525
Other countries	20,040	45,508	--	--	--	--

<sup>a</sup> Data for January through March.

Source: CNP, 1999.

Appendix Table 6. Graduate students in the University of Costa Rica's Agricultural Sciences and Natural Resource curricula.

Year	Females		Males		Total	
	Costa Ricans	Others	Costa Ricans	Others	Costa Ricans	Others
1990	5	--	10	1	15	1
1991	5	2	16	--	21	2
1992	3	1	2	--	5	1
1993	2	--	10	1	12	1
1994	3	--	10	1	13	1
1995	2	--	3	1	5	1
1996	4	1	10	2	14	3
1997	4	2	12	--	16	2
1998	5	--	12	3	17	3
1999	--	--	7	1	7	1
Total	33	6	92	10	125	16

Source: UCR-CIA, 1999; personal communication.