

The Latanye Broom Industry of St. Lucia

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Introduction

In St. Lucia, local brooms made from the leaves of the Latanye palm (*Coccothrinax barbadensis*) are used primarily to sweep and clean houses and other buildings. But the potential of this broom-making tradition may be exploited, to transcend our current economic challenges, thereby increasing the efforts at diversification of the St. Lucia's national economy and Agriculture sector. The promotion of this component of Agricultural diversification will empower rural people, mainly women in particular, with work and income.

The Market

The Latanye brooms are produced for local market and for export. Table #1 below details countries to which brooms were exported from St. Lucia for the period 1992 to 2003.

Table #1: *Total Value and Quantities of Brooms imported from St. Lucia by country, 1992 to 2003*

Country	F.O.B. (\$)	Quantity
BARBADOS	12690	7587
ST. MAARTEN	497	59
ST. VINCENT AND THE GRENADINE	52186	38341
UNITED STATES VIRGIN ISLANDS	415	23
VENEZUELA	275	550
Total	66063	46560

(Source St. Lucia Government Statistical Department 2004)

The 2001 study of St. Lucia's Latanye broom industry by Lyndon John's provides the only documented information of the sale of latanye brooms in the local market. In this study an effort was made to include all broom producers. A sample size of 69 individuals was used in this study island-wide. The highlight of the study was that, there were

significant sales of Latanye brooms in the Castries and Vieux Fort areas. Further details from the study revealed that 25 persons (equivalent to 36% of sample) sold 70 brooms on a monthly basis; on the other hand 11 persons (equivalent to 16% of the sample) sold between thirty to fifty brooms on a monthly basis. The total number of brooms produced by the representation of 36% is 1750 (70x25); and 330 to 550 brooms for the representation of 16% (11x30 and 11x50). Therefore based on this study for that period (John 2001), the average numbers of brooms produced locally were between 2080 and 2300 on a monthly basis for the local market.

John had also explained that 'the monthly range on income for a monthly basis by respondents is \$1.00 to \$2000'.

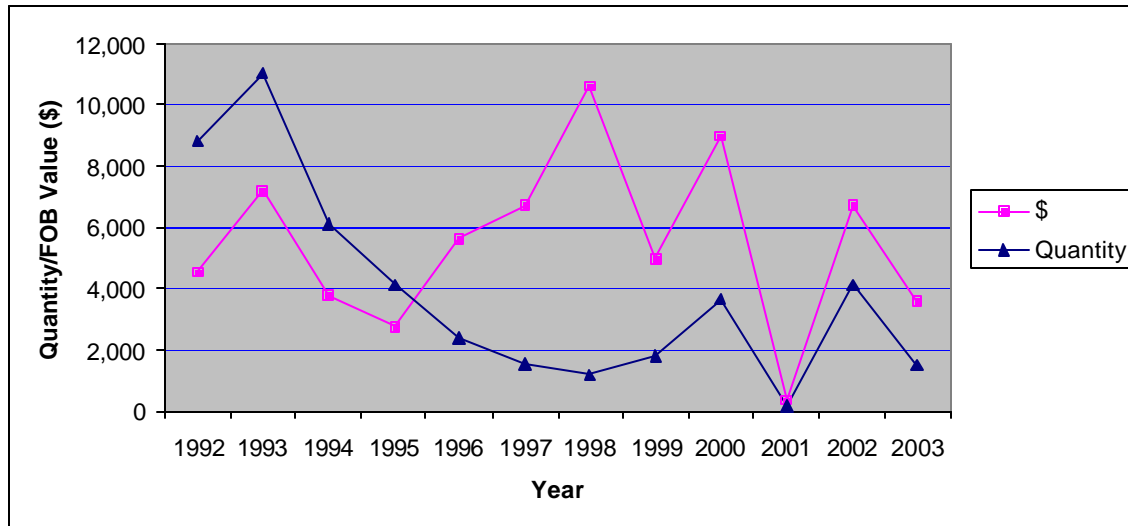
The main importers of St. Lucia's Latanye brooms are brooms are St. Vincent & the Grenadines and Barbados. Over the twelve-year period 1992 to 2003, St. Vincent & The Grenadines imported 82.3% and Barbados 13.3% of St. Lucia's total broom exports. It should be noted that the average number of brooms exported per year to all countries from 1998 to 2003 is 2,081 brooms per year.

Table #2: *Total Value and Quantities of St. Lucia's Annual Broom Exports, 1992-203*

Year	Value (EC \$)	Quantity
1992	4,551	8,826
1993	7,191	11,051
1994	3,785	6,120
1995	2,786	4,136
1996	5,650	2,389
1997	6,750	1,550
1998	10,600	1,224
1999	5,010	1,808
2000	9,004	3,632
2001	365	181
2002	6,747	4,161
2003	3,624	1,482
Total	66,063	46,560

(Source St. Lucia Government Statistical Department 2004)

Figure #1: *Total Annual Values (FOB) and Quantities of Brooms Exported from St. Lucia, 1992 to 2003*



(Source St. Lucia Government Statistical Department 2004)

One may observe a decrease in the quantity of brooms exported from 11000 in 1993 to 181 in 2001. One may infer that one reason for this decline in exportation is related to the availability of leaves. This proposition is validated by John's study of the Latanye industry (2001). Moreover a local exporter of brooms to Barbados (Personal communication: S. Bailey 2004) underscored that specific to that period was a high demand for St. Lucian brooms in Barbados and in St. Vincent and that there were many bush fires. This situation was aggravated by the unavailability of shipping during the mentioned period.

Although brooms were imported into St. Lucia- for example from China, United Kingdom, Puerto Rico and the United States in 2003 (Source: St. Lucia Government Statistics Department 2004), there is still a demand for local brooms. Coinciding with the high demand for leaves is the decrease in the availability of leaves to make brooms. This position was confirmed by two main broom producers (Personal communication: P. Ferdinand and W. William 2004). Leaves are sold by the bundle. One bundle of leaves costs between E.C. \$25 to \$30. One bundle has 25 to 30 latanye leaves.

The Role of the Forestry Department:

The Forestry Department in St. Lucia has played its role in identifying this potential problem of having Latanye as a vulnerable species, and has been successful in the propagation of plants and their establishment in plantations. To date, there are twenty plantations of Latanye on farmers' holdings. Survival rates of 90% to 100% have been achieved on the aforementioned holdings. More importantly, the Forestry Department has played a pivotal role in involving all stakeholders in the Latanye industry to discuss and resolve all the issues. This has been achieved by having meetings with Broom Exporters, Broom Producers, Extension Services, Non-Governmental Organizations and the Bureau of Standards.

The Plant:

Latanye as a crop has many advantages that make it an interesting alternative as a crop to a farmer. Firstly it has low ecological requirements. It can grow on marginal lands. But mature plants have been obtained on the more fertile soils, even yielding harvestable leaves within two years of planting. This plant is also native, with low incidence of pests and diseases, and by the morphology of its leaves is resistant to strong wind currents. This means a low cost of maintenance for a farmer.

Table # 3: *Cost of Production of 1 acre of Latanyé, from establishment to harvest*

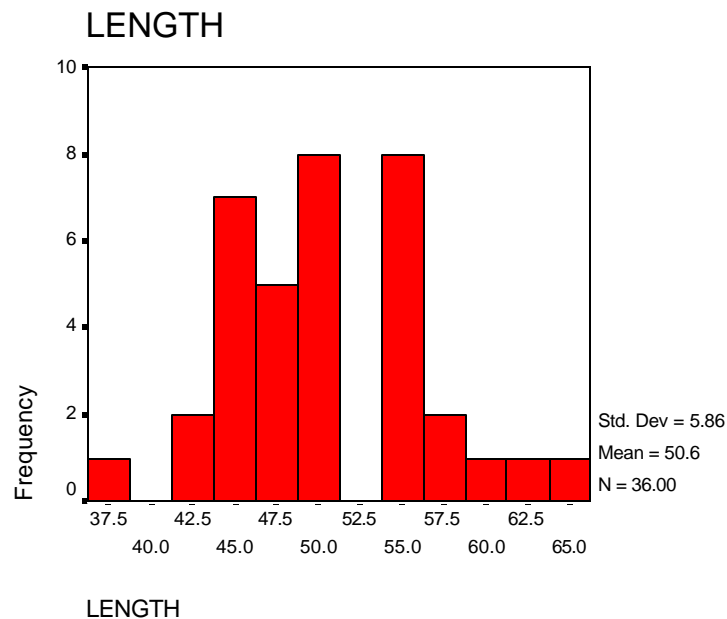
Activity	Unit	Unit Cost (\$)	Description	Quantity	Percentage of Total Cost (%)	Total Cost (\$)
Land Preparation	<i>Acres</i>	436.8	1 Fortnight	1	13	436.80
Digging Holes	<i>Holes</i>	0.54	15 days	1,210	20	655.20
Planting	<i>Plants</i>	0.54	15days	1,210	20	655.20
Fertilizer	<i>bags</i>	55		3 bags	5	165.00
Fertilizing	<i>Acres</i>	\$43.68/ day	each plant 4 oz		1	43.68
Maintenance	<i>Acres</i>	1286	(each yr \$643.06)	twice for two years	40	1,286.00
						\$3241.88

Dimension of Leaves Harvested

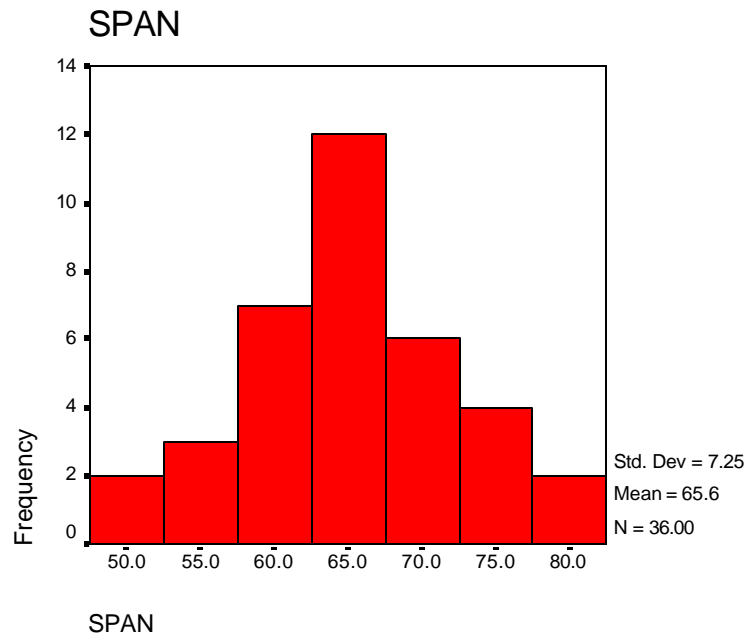
Owing to the demand for the Latanye broom, there is a significant variation in the dimensions of leaves harvested from the wild, and consequently, in the quality of broom produced.

With proper agronomic practices, it is possible to obtain leaves that would produce a quality broom. Figure #2 and #3 and Table #10 of the Appendix, illustrates the variation in the length and span of leaves harvested at from a twenty percent (36 leaves) sample of a total of one hundred and eighty leaves at La Pointe. This information is valid for leaves obtained from a site with a sustainable harvesting system of the leaves.

Figure # 2: Length of Latanye leaves measured



The results show that in the case of the leaf length, that the mean length harvested is approximately fifty point six centimeters (50.6 cm), with a median and mode of fifty centimeters (50 cm).

Figure # 3: Span of Latanye leaves measured

In the case of leaf span, the mean is sixty five point six (65.6 cm), and the median and the mode respectively is: sixty five and (65 cm) and sixty two centimeters (62 cm).

Dimensions of leaves harvested in the wild for the production of local brooms are significantly below these values mentioned.

Standards for Latanye Brooms

To ensure the sustained supply of brooms, there must be a steady supply of leaves. However if one wishes to maintain and augment a product in the 21st century, he has to consider competition and standards for the brooms. It is for this reason that the Forestry Department in January 2004 undertook studies of Latanye leaves and brooms produced. The Department has liaised with the St. Lucia Bureau of Standards in this aspect to determine the irregularities in the way brooms are made. A total of 34 brooms were measured: the length and diameter of the broom were measured using a tape and diameter tape respectively. Five parts of the broom were measured: the parts A, B, C, and D as indicated in Figure #4. Using Table # 4, one observes that the distribution of the measurements of brooms is normal. Noteworthy in Table #4, and highlighted in yellow colour, is

that there is greater variability in the length of the parts A, B and D. This is observed by the higher values obtained for standard deviation and variance giving values for **A: 2.35 and 5.5, B: 2.18 and 4.5** and **D: 2.87 and 8.2 centimetres**. This information may be employed in finalizing standards of the dimensions of brooms to be sold on the local market.

Figure #4: *Parts of broom studied in survey of 34 Brooms*

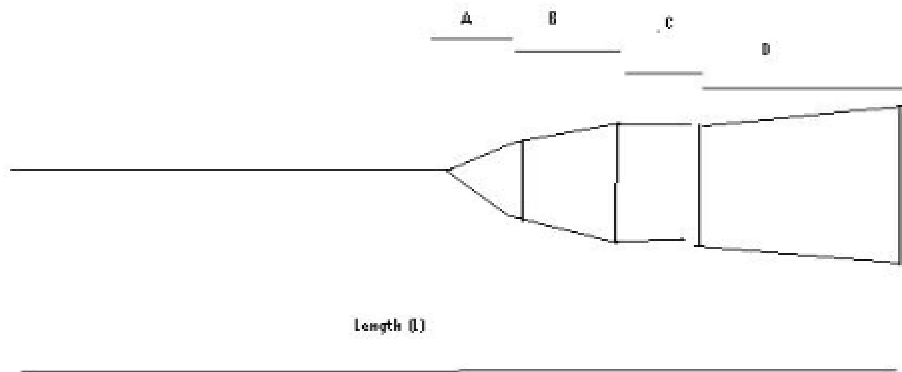


Table #4: *Descriptive statistics of the dimensions of Brooms Sold in St. Lucia. (Where *.L are the Lengths of the parts of the brooms and *.d are the Diameters of the brooms.*

Dimensions (cm)	N	Range	Minimum	Maximum	Sum	Mean	Std. Error	Std. Deviation	Variance
LENGTH	34	.33	1.30	1.63	49.07	1.4432	.0131	.07642	.006
AL	34	10.00	6.00	16.00	327.00	9.6176	.4022	2.34540	5.501
BL	34	9.00	4.00	13.00	283.00	8.3235	.3668	2.13854	4.573
CL	34	7.00	3.00	10.00	204.10	6.0029	.2809	1.63772	2.682
DL	34	17.00	13.00	30.00	813.00	23.9118	.4934	2.87716	8.278
Ad	34	1.20	2.50	3.70	100.40	2.9529	.0480	.27987	.078
Bd	34	1.90	4.90	6.80	186.70	5.4912	.0917	.53449	.286
Cd	34	3.20	5.00	8.20	202.60	5.9588	.1175	.68540	.470
Dd	34	5.40	7.60	13.00	361.00	10.6176	.2264	1.32035	1.743
Valid N (listwise)	34								

Harvesting of Latanye Leaves

Central to the latanye broom making industry is to have a sustainable harvesting regime for the leaves. Based on observations using a sample of 28 plants on a farmer's holdings (Paulina Ferdinand), the results showed that there is a lot of potential and possibility to produce and harvest leaves in a sustainable production system. That plantation was established in 2001, and the first harvest was in 18 March 2004. The second harvest was in June, three months later. In this case the farmer did not incorporate fertilizer in production.

Fig #5: *Leaves present and harvested from Latanyé Palm between March and June 2004.*

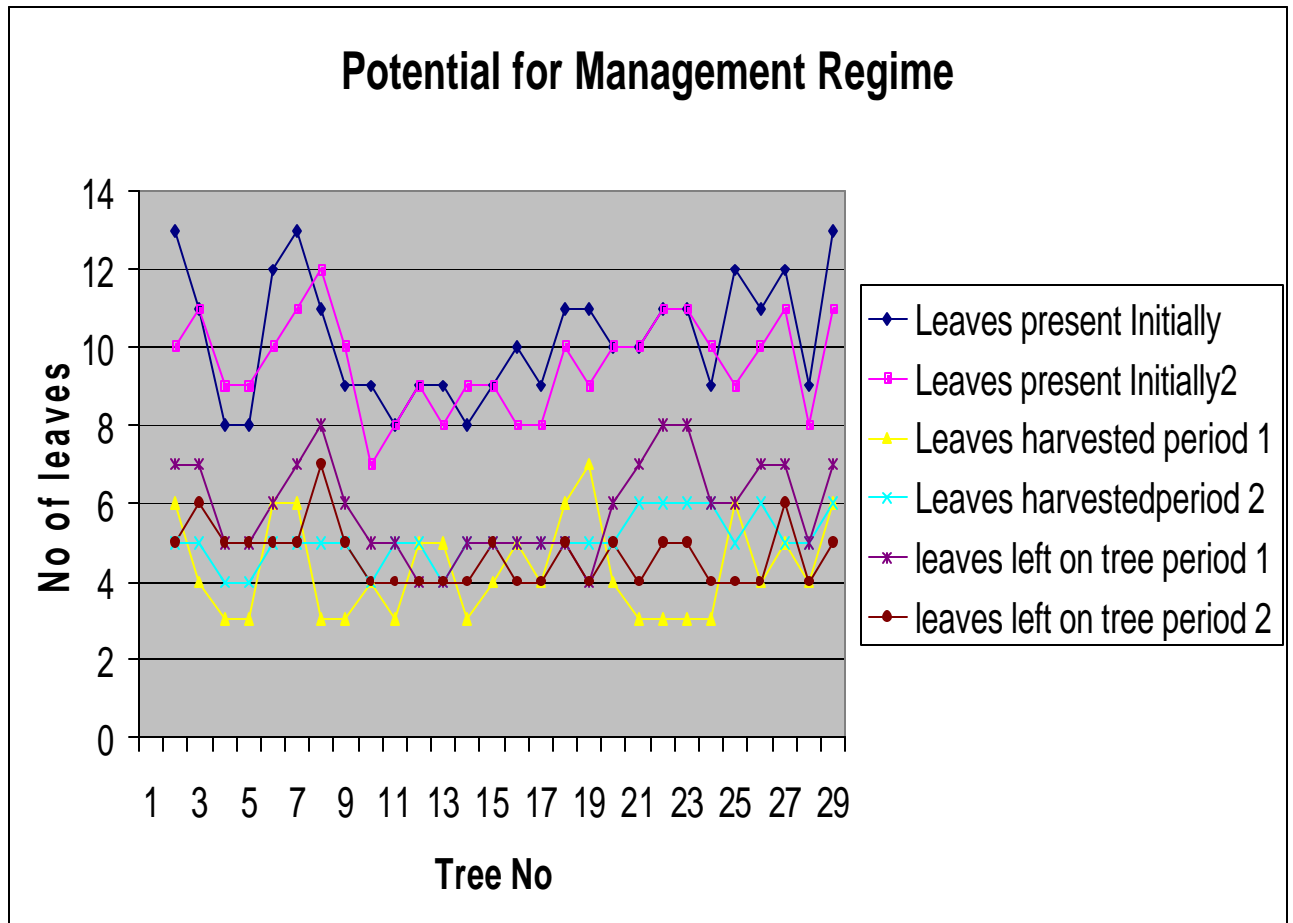
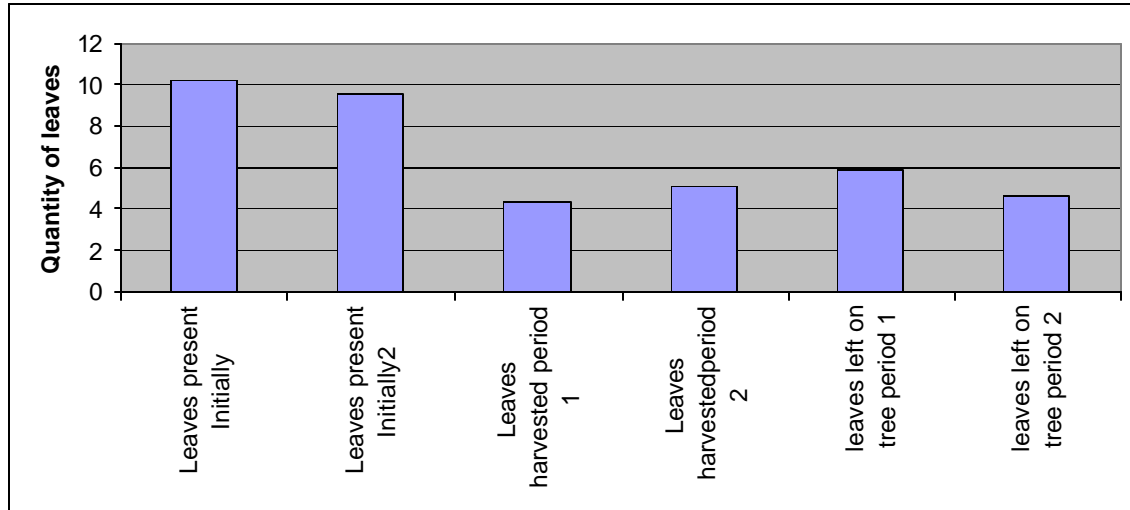


Figure #6: Average Number of Leaves present and harvested before and after the first and second Harvest



In Figure # 5 and 6, one may observe that the number of leaves present initially on the Latanye plant before the **second harvest** is on an average, the same as the number of leaves present initially before the **first harvest**. This means that the latanye tree has recuperated from harvesting of its leaves. It also implies also that one may sustainably harvest leaves.

The total number of leaves harvested for the first period was 121, and 142 were collected during the second harvest. The average number of leaves harvested for the first harvest is 4, and 5 for the second harvest.

By conjecture, if 28 plants can produce 142 leaves, then one acre of latanye with 1210 plants may produce: $(142/28) \times 1210$ approximately 6136 leaves. If one bundle contains a maximum of 30 leaves, one may obtain: $(6136/30) = 204$ bundles. Therefore the potential revenue that can be accrued is $204 \times \$25 = \5100 . Alternatively, from the 6136 leaves can be used to make 876 brooms $(6136/7)$. Necessary to make one broom are five to seven leaves. The price of one broom ranges from \$5.00 to \$ 7.00. Possible total revenue generated from 876 brooms ranges from $876 \times \$5.00$ to $876 \times \$7.00$ which is equivalent to \$4380 to \$6132.

Other costs not considered in this analysis are that for drying, transportation, for making the actual broom, storage and rent of land.

Objectively, being able to supply 876 leaves would be a success in maintaining livelihoods, a tradition of broom making and maintaining the biodiversity of a once vulnerable plant.

The Research Unit is presently embarking on verifying these observations of harvesting in experiments. On the 29th of September 2004 at Glavier Dennery, the members of the Research Unit of the Forestry Department, together with the input of the other Forest Range Officers and the Information Unit of the Ministry of Agriculture implemented an experiment to determine which treatment is the optimum regime to sustainably harvest Latanye leaves. The four treatments were the removal of 30%, 40%, 50% and 60% of leaves present initially. Each of these four treatments was done in three blocks. The block has the dimensions of 38 ft. x 38 ft.

The next measurement is due in January 2005. This will verify the observations of harvesting from Paulina Ferdinand's holding.

The Forestry Department is currently collaborating with other stakeholders: governmental and non-governmental to undertake cost-benefit analyses of the latanye broom making industry, marketing of Latanye Brooms and the formation of a national Broom Producers Organization.

AppendixTable #5: *Brooms Exported from St. Lucia (Source St. Lucia Government Statistical Department 2004)*

Country	FOB Value (\$EC) 2003	Quantity (Number) 2003	FOB Value 2002	Quantity 2002
BARBADOS	3,304	1,474	4,920	4,087
ST. MAARTEN	-	-	87	27
ST. VINCENT AND THE GRENADINES	-	-	1,650	33
UNITED STATES VIRGIN ISLANDS	320	8	90	14
		2001		2000
BARBADOS	360	180	1,920	960
ST. LUCIA	480	240	-	-
ST. MAARTEN	-	-	300	-
ST. VINCENT AND THE GRENADINES	-	-	6,784	2,672
UNITED STATES VIRGIN ISLANDS	5	1	-	-
		1999		1998
BARBADOS	1,250	580	-	-
ST. MAARTEN	10	8	100	24
ST. VINCENT AND THE GRENADINES	3,750	1,220	10,500	1,200
		1997		1996
ST. VINCENT AND THE GRENADINES	6,750	1,550	5,650	2,389
		1995		1994
BARBADOS	36	36	900	270
ST. VINCENT AND THE GRENADINES	2,750	4,100	2,610	5,300
VENEZUELA	-	-	275	550
		1993		1992
ST. VINCENT AND THE GRENADINES	7,191	11,051	4,551	8,826

Table # 6: Results from Harvesting leaves at Paulina Ferdinand's holding.

Tree No	Leaves harvested1	# of Leaves Left on Tree	Leaves present Initially	Leaves present Initially2	Leaves harvested1	Leaves harvested2
1	6	7	13	10	6	5
2	4	7	11	11	4	5
3	3	5	8	9	3	4
4	3	5	8	9	3	4
5	6	6	12	10	6	5
6	6	7	13	11	6	5
7	3	8	11	12	3	5
8	3	6	9	10	3	5
9	4	5	9	7	4	4
10	3	5	8	8	3	5
11	5	4	9	9	5	5
12	5	4	9	8	5	4
13	3	5	8	9	3	5
14	4	5	9	9	4	5
15	5	5	10	8	5	5
16	4	5	9	8	4	5
17	6	5	11	10	6	5
18	7	4	11	9	7	5
19	4	6	10	10	4	5
20	3	7	10	10	3	6
21	3	8	11	11	3	6
22	3	8	11	11	3	6
23	3	6	9	10	3	6
24	6	6	12	9	6	5
25	4	7	11	10	4	6
26	5	7	12	11	5	5
27	4	5	9	8	4	5
28	6	7	13	11	6	6
				Total	121	142

ACTIVITIES IN THE NURSERY:

Table #7 a and b which follow details in a summary the activities in the nursery production of Latanye plants.

Table#7 a): *Activity schedule in Nursery for 10000 seedlings*
(The letters a to h represent the months September to May)

	a				b				b				c				d			
ACTIVITY	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Soil Preparation filling bags	*	*	*	*	*	*	*	*												
Moving Pots		*	*	*	*	*	*	*	*											
Transplanting			*	*	*	*														
Fertilizer (liquid)							*													
Watering																				
Maintenance and Weeding							*	*	*				*	*	*					

Table#7 b): *Activity schedule in Nursery for 10000 seedlings*
(The letters a to h represent the months September to May)

	e				f				g				h				i			
ACTIVITY	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Soil Preparation filling bags																				
Moving Pots																				
Transplanting																				
Fertilizer (liquid)																				
Watering													*	*	*	*	*	*	*	*
Maintenance and Weeding		*	*	*																

Table #8: Cost of Production in Nursery of 10000 Plants of Latanye

ITEM/OPERATION	UNIT	UNIT PRICE	QUANTITY	TOTAL COST Yr.1
CAPITAL COST				
Seeds	g	0.08	5500	436.5
Soil Preparation:				
Mixing soil	5 batches		15	655.20
1 batch of top soil	2 load	650	1	1300
Materials & Chemicals				
Plant bags	bags	8.40	10000	840.00
c) Fertilizer: Nutru Leaf	Packet	18	1 packet	18
Labour:				
Filling bags	300 plants/man day	43.68	10000	1455.99
e) Moving pots	1000 pots/ man day	43.68	10000	436.8
f)Transplanting	2000 plants per man day	43.68	10000	218.40
g) Fertilizing	10000 plants/ 2 hrs	43.68	10000	11.25
h) Weed Control	12 man days	43.68	10000	540
"	12 man days	43.68	10000	540
"	12 man days	43.68	10000	540
Watering	2 hrs/day		1 month	1800
GRAND TOTAL				8792.14

Plantation Establishment

The spacing of plants depends on whether it is a mixed or pure plantation. Intercropping of Latanye is done with Mauby (*Colubrina elliptica*). Table #9 which follows presents the various plant densities used in plantation. Then is presented the cost of establishment of one (1) acre of Latanye in pure stands, and mixed with Mauby.

Table #9: *Spacing used in the establishment of Plantations.*

	Spacing (ft x ft)	Spacing (m x m)	No of Trees/ ha	No of Trees/acre
Pure stand	6 x 6	1.8 x 1.8	3086	1249
Mixed stand a): Mauby to Mauby	12 x 12	3.7 x 3.7	1543	624
Mixed stand b): Latanye to Latanye	12 x 12	3.7 x 3.7	1543	624

Table # 10: *Dimensions of harvested Latanye Leaves*

		LENGTH	SPAN	PETIOLE
N	Valid	36	36	36
	Missing	1	1	1
Mean		50.5833	65.6111	35.0833
Std. Error of Mean		.97620	1.20796	.93806
Median		50.0000	65.0000	35.0000
Mode		50.00	62.00	30.00
Std. Deviation		5.85723	7.24777	5.62837
Variance		34.30714	52.53016	31.67857
Range		27.00	30.00	24.00
Minimum		38.00	50.00	24.00
Maximum		65.00	80.00	48.00
Percentil es	25	46.0000	62.0000	30.0000
	50	50.0000	65.0000	35.0000
	75	55.0000	70.0000	38.7500