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# FRESH PINEAPPLES IN THE REPUBLIC OF GUINEA

**AN INVESTMENT ANALYSIS**

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# FRESH PINEAPPLES IN THE REPUBLIC OF GUINEA

## AN INVESTMENT ANALYSIS

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## I. EXECUTIVE SUMMARY

The Republic of Guinea was once the horticultural leader of French West Africa. Following independence and a series of wedge positions adopted by President Sékou Touré during his initial mandate, the French expatriates who fueled the country's horticultural dominance left Guinea for the Côte d'Ivoire, Cameroon, and Senegal, leaving Guinea to a long decline in horticultural exports. Over the past 45 years, many companies and organizations have attempted to reverse this downward trend and regain the country's horticultural leadership. Most of these attempts have failed, and none has achieved any sustainable or material success.

The emergence of a new variety of fresh pineapple — MD-2 — and its successful adoption by Del Monte Fresh in Costa Rica, in the absence of any organized response to this development by West African suppliers, presents a unique opportunity for Guinea to reestablish its credentials as a principal supplier of fresh pineapple to the European Community. A preliminary analysis of feasibility, including appraisals of cost and revenue, indicates that Guinea can compete successfully in this market. The country's costs are significantly lower than those of countries in Africa and Latin America for which cost information is available. Logistics and cold-chain management, traditional deal breakers in Guinean horticulture, can both be accomplished with available resources. More significantly, the internal rate of return over the 10-year project exceeds 55 percent.

Attracting a qualified investor for this project will require a more detailed prospectus, which should include Guinea's relative standing among its West African neighbors as an efficient producer of MD-2 and a clearer understanding of the concessions and incentives which the Guinean government is prepared to put in place to attract this promising source of rural employment and export earnings.

## II. HISTORICAL PERSPECTIVE

During the period preceding West African independence in the latter half of the 1950s, Guinean horticulture dominated France's West African colonies. By the mid-20<sup>th</sup> century, Conakry was the leading source for French West African bananas, with most production in the hands of second- and third-generation French planters. All this changed within a few years of independence in 1958. Unlike Senegal, the Côte d'Ivoire, Cameroon, and most other former French colonies in West Africa, Guinea, under President Sékou Touré, declined France's invitation to become part of the nascent French Community and severed its links to the CFA Franc. Coupled with the government's move to a centrally planned economic model, this led to a wholesale exodus of French expatriates. Many of these experienced and well-connected planters migrated to the Côte d'Ivoire, where they cultivated the banana, pineapple, and mango, which have continued to prosper into the 21<sup>st</sup> century. Meanwhile, Guinea's horticultural economy has lost much of its success and prosperity from banana and pineapple production.

The Touré regime undertook several measures to stimulate the fresh fruit and vegetable sector within the context of its state-owned and -operated economic model, as evidenced in particular by the construction of two major processing facilities, the SALGUIDIA (Société Arabo-Libyenne-Guinéenne pour le Développement Industriel et Agricole) plant in Kindia and the Usine de Kankan in Upper Guinea. Deficient infrastructure, particularly unreliable electrical supply, forced both facilities out of operation for most of the past 25 years, leaving them in a state of disrepair and obsolescence that makes their rehabilitation unlikely. After the death of Sékou Touré in 1984, Lt. Col Lansana Conté of the Military Committee of National Recovery assumed the presidency. Conté remains president of Guinea through the time of this writing. Under Conté, there have been efforts to discontinue the central planning approach to the economy in favor of liberalization, promoting private enterprise, and encouraging foreign investment. While this approach has yielded some favorable results in extraction — Guinea possesses more than 25 billion metric tons (MT) of bauxite, four billion tons of high-grade iron ore, significant diamond and gold deposits, and an undetermined quantity of uranium — there has been little positive result in horticulture.

The lack of access to affordable electrical power and a poor water delivery system are the prime factors limiting Guinea's attractiveness as a site for major external investment in horticultural ventures. The country is littered with the remains of medium- and large-scale horticultural and agroindustrial projects — SALGUIDIA, L'Usine de Kankan, SAIG (Société Agro-Industriel de Guinée), NABEKAM-Bio, A.I.C. (Agro-Investment Company) — that were founded on good intentions but foundered on deficient infrastructure, government support, liquidity, and security. With only a few hours of publicly supplied electricity and water per day, Guinea is not an appropriate venue for water- or energy-intensive agricultural projects. While there are myriad plans that could be considered in the absence of these constraints, there is no reasonable prospect at this time for any material improvement in either area. As a result, the investment proposal outlined here for pineapple, and the accompanying report on mangoes, will concentrate on approaches that can be undertaken with these constraints, not on schemes that ignore these constraints.

### III. GLOBAL MARKET TRENDS: FRESH PINEAPPLE

World pineapple production reached 15.4 million MT in 2003, continuing an impressive annualized three percent rate of growth over of the preceding 40 years. Although FAO lists 83 pineapple-producing countries in the world, the top 10 producers contribute more than 70 percent of global output (see Exhibit 1). With production of 7.8 million MT, Asia is the dominant production region, accounting for more than 50 percent of world production.

**Exhibit 1: World Pineapple Production and Principal Countries of Origin**

COUNTRY	RANK	PRODUCTION (THOUSANDS OF MT)	% OF WORLD PRODUCTION
Thailand	1	1899.4	12
Philippines	2	1697.9	11
Brazil	3	1440.0	9
India	4	1310.0	8
China	5	1269.7	8
Costa Rica	6	984.2	6
Nigeria	7	889.0	6
Mexico	8	720.9	5
Indonesia	9	677.1	4
Taiwan	10	447.8	3
Guinea	26	105.0	0.7
Rest of world		4007.6	26
World		15448.6	100

Source: FAOSTAT 2003

Forty-one percent (6.3 million MT) of the world's pineapples was exported. The world trade in pineapples takes place across two separate channels. In one is the production and export of processed pineapple products (principally juices, concentrates, canned solid product, and other derivatives), which accounted for 80 percent of total pineapple exports (5.1 MT) in 2003. While the epicenter of this industry during much of the 20<sup>th</sup> century was firmly situated in Hawaii, high labor and land costs eventually forced this activity across the Pacific into Southeast Asia, where it remains. The dominant players in this segment today are Thailand, Indonesia, and the Philippines, which, over the past five years, accounted for almost 70 percent of the global processed pineapple trade. The processed channel is characterized by enormous scale economies at the producer/processor level, slow growth in total sales volume, and considerable price volatility in the marketplace.

Fresh pineapple exports are the other channel, comprising the remaining 20 percent of total commodity exports. Unlike the relatively stagnant processed market, the global marketplace for fresh pineapples has been extremely dynamic over the past decade, carried primarily by the emerging MD-2 as the worldwide variety of choice. Costa Rica, which had been a relative nonentity in the world pineapple trade as recently as 1990, was selected by Del Monte as its venue for MD-2 plantings in the early 1990s. It has since had a meteoric rise in the world rankings: by 2004, Costa Rica was first among fresh pineapple exporting countries,

with 30 percent of world volume. Costa Rica dominates the North American and European markets, which together account for more than 70 percent of the world's fresh pineapple imports (see Exhibit 3).

### Exhibit 2: Fresh Pineapple Exports, 2001-2004

COUNTRY	2004	2003	2002	2001	4-YEAR SHARE (%)
World	2,284	1,746	1,582	1,344	
Costa Rica	693	599	459	387	31
Côte d'Ivoire	205	202	237	239	13
Mexico	198	192	192	117	10
Philippines	192	195	172	154	10
Ghana	64	45			2
USA	69	61	56	48	3
Honduras	62	35	9	15	2
Ecuador	68	49	34	16	2
Thailand	17	7			<1
Panama	12	5	1	1	<1
Share (%) of top 10	69	80	73	73	

*All figures in thousands of metric tons unless otherwise indicated. Re-exports are excluded.  
Source: Trademap*

### Exhibit 3: Fresh Pineapple Imports. 2001-2004

	2004	2003	2002	2001	4-YEAR SHARE (%)
World	1,710	1,465	1,325	1,160	
USA	514	474	406	321	30
Belgium	214	145	109	100	10
Japan	142	123	123	118	9
France	140	135	157	163	11
Italy	100	84	80	72	6
Germany	92	67	79	65	5
Spain	73	58	60	52	4
Canada	71	63	57	50	4
United Kingdom	60	42	40	33	3
Netherlands	58	54	27	28	3
Share (%) of top 10	86	85	86	86	86

*All figures in thousands of metric tons unless otherwise indicated.  
Source: Trademap*

Over the past 10 years, fresh pineapple imports to the United States have quadrupled from 135,000 MT in 1996 to 577,600 MT in 2005. This annualized growth rate of 17.5 percent has been exceeded only by the 20 percent annualized growth rate of the Costa Rican component of total imports, which grew, over the same period, from 84,700 MT to 438,800 MT. The situation in Europe is similar (see Exhibit 4).

#### Exhibit 4: EU Pineapple Imports by Origin, 1985-2005

	COSTA RICA	CÔTE D'IVOIRE	GHANA	OTHER ORIGINS	TOTAL
1985	1.1	159.8	1.6	9.3	171.8
1995	49.7	119.6	11.9	49.4	230.6
2000	112.7	158.2	29.3	18.1	318.3
2005	361.2	99.0	45.0	101.6	606.8
20-year growth (per annum)	34%	-2%	18%	13%	6%
10-year growth (per annum)	22%	-2%	14%	7%	10%
2005 share of market	60%	16%	7%	17%	

*All figures in thousands of metric tons unless otherwise indicated.*

*Source: Eurostat, via Fruitrop, 3/06*

In 1985, Côte d'Ivoire, whose pineapple exports consist almost entirely of the Smooth Cayenne variety, represented 93 percent of EU imports. By 1995, Côte d'Ivoire's volume had declined by 25 percent and its EU market share had shrunk to 52 percent, while Costa Rica had emerged in second place with 49,735 MT and a 22 percent market share. By 2005, EU imports had increased to 606,784 MT, Côte d'Ivoire volumes had declined by an additional 17 percent, and Costa Rica — on the strength of the MD-2 — had increased its EU volumes more than sevenfold. In the process, Costa Rica had taken market leadership in the EU with a 60 percent share while Côte d'Ivoire dropped to a share of only 16 percent. To some extent, Côte d'Ivoire's market deterioration is in large part attributable to widespread political turmoil since the outbreak of civil war in 2002. But during the five years preceding the outbreak of hostilities (1996 to 2001), its market share had declined from 56 percent (153,947 MT) to 48 percent (174,505 MT), while Costa Rica gained 13 points of market share. This supports the view that Costa Rica's rise to power as a pineapple grower is due more to the MD-2 than to the political turmoil of its major competitor. Costa Rica's rapid assumption of market dominance in Europe has been accompanied by a broadening gap between its FOB price realizations and those of the Côte d'Ivoire. The recent comparative price history of ocean shipments from these two origins at the Rungis market illustrates this point (see Exhibit 5).

**Exhibit 5: Monthly Rungis Wholesale Price Performance, MD-2 vs. Smooth Cayenne, 2004-2005**

	<b>COSTA RICA MD-2</b>	<b>CÔTE D'IVOIRE SMOOTH CAYENNE</b>	<b>COSTA RICA PRICE PREMIUM</b>
<b>2004</b>			
October	€1.07	€0.80	34%
November	€1.25	€0.84	49%
December	€1.22	€0.84	45%
<b>2005</b>			
January	€1.19	€0.81	47%
February	€1.39	€1.08	29%
March	€1.37	€1.08	27%
April	€1.33	€0.96	39%
May	€1.06	€0.85	25%
June	€1.00	€0.85	18%
July	€0.85	€0.86	-1%
August	€0.93	€0.82	13%
September	€1.01	€0.72	40%
October	€0.98	€0.78	26%
November	€0.80	€0.78	3%
December	€0.89	€0.81	10%
Average	€1.09	€0.86	27%
Average per container	€17.99	€14.19	

*All figures are price per kilogram unless otherwise indicated.*

*Source: Mercuriale Annuelle, 2004 and 2005 (Ministère de l'Agriculture et de la Pêche, SNM)*

The 27 percent average price differential between Côte d'Ivoire and Costa Rican pineapple does not appear to be attributable to poor quality or condition of the Smooth Cayenne on arrival in Europe. Indeed, pricing on Smooth Cayenne ocean and air shipments from Benin, Ghana, and Cameroon during this same period were comparable to that of the Côte d'Ivoire product. Rather, the difference is largely due to the market's preference for the internal and external color and taste of the MD-2.

Anecdotal evidence supports the contention that the MD-2 pineapple is perceived in European and U.S. marketplaces as distinctly superior to the green-skinned, pale-fleshed Smooth Cayenne. In a recent article (July 4, 2006) in "Graphic Ghana," Mawuli Agboka of the Ministry of Food and Agriculture noted that "pineapple farmers in the country had lost about \$11 million worth of investment due to the lack of market for the Smooth Cayenne, the variety mostly cultivated in the country for export. To ensure that Ghana's pineapple farmers switched to the new MD-2 variety, the Ministry of Agriculture and the World Bank had each allocated \$2 million to support large and small farmers, respectively, to have access to the MD-2 planting materials and multiply them for use now and in the future. Mr. Agboka said the MD-2 threat started gradually in 1996, with a drastic effect on Ghana and Côte d'Ivoire around 2001/2002 and became worse last year."

This fundamental transition in the fresh pineapple channel from Smooth Cayenne to MD-2 represents both a threat and an opportunity for the Guinean pineapple industry. The threat is consumers' shift away from the Smooth Cayenne, which constitutes virtually all of Guinea's export volume. Current export operations are limited to Sobragui (Brasserie Skol), which reports annual volumes of 500-600 MT, and Cooperative Burquiah, which completed its 2005-2006 season with just under 100 MT. With only 600-700 MT of pineapple exports at risk, Guinea's immediate exposure to this transitional threat is limited. Guinea's limited role in world pineapple exports is not recent: over the past four years, Guinea's volumes have, on average, represented only 0.02 percent of global fresh pineapple exports (see Exhibit 6).

**Exhibit 6: Guinea's Global Fresh Pineapple Exports, 2001-2004**

YEAR	WORLD EXPORTS (THOUSANDS OF MT)	GUINEA EXPORTS (THOUSANDS OF MT)	GUINEA SHARE OF WORLD EXPORTS (%)
2004	2,284	0.4	0.02
2003	1,746	0.4	0.02
2002	1,582	0.1	0.01
2001	1,344	0.7	0.05
4-year average	1,739	0.4	0.02

Source: Trademap

Several factors make this transition an opportunity for Guinea:

- Favorable growing conditions in the Maferenya-Forecariah-Kindia triangle, including availability of suitable land, ample surface water for irrigation, and access to competent labor at competitive rates. That Guinea was originally chosen over the Côte d'Ivoire, Senegal, and Cameroon as the primary source of tropical fruits for French colonists speaks to the favorable conditions here.
- Guinea appears to have a comparative FOB cost advantage over competitors. Exhibit 10 shows a production fruit cost in Guinea of \$0.09 per kg, compared to \$0.129/kg and \$0.120/kg in Honduras and South Africa, respectively.
- Less reluctance to convert from Smooth Cayenne to MD-2. Côte d'Ivoire, Ghana, and Cameroon have thrived for decades on the Smooth Cayenne and are somewhat unwilling to adapt to new market realities. With a weaker commitment to Smooth Cayenne, at least as defined by export distribution, Guinea should be able to introduce the MD-2 more easily than its West African neighbors, particularly if a major international investor can be motivated to lead this operation.
- Conakry is two days closer to the major ports of Western Europe than Abidjan and Accra, and five days closer than Puerto Limon in Costa Rica. While Conakry is widely seen as having noncompetitive ocean freight costs, the fact remains that the fundamental determinants of freight cost are destination, dwell time, and cargo volume. If these three parameters can be properly aligned, then Guinea can prevail over other origins.
- Shorter transit times can also mean better quality and condition upon arrival, assuming that the post-harvest cold chain is intact. Several major refrigerated ocean carriers operate in Guinea, which translates into good equipment, cold chain integrity, and transit times.

## **IV. COMPANIES CURRENTLY/RECENTLY ACTIVE IN THE EXPORT PINEAPPLE SECTOR IN GUINEA**

Few companies in Guinea have been active in the export of fresh pineapple in recent years. The number of successful companies is fewer still.

### **Sobragui**

A Maferenya-based subsidiary of Brasserie Skol, the Belgian-owned monopoly brewery, Sobragui established a Smooth Cayenne production unit in 1992 to fund the import of hops and other ingredients used to make beer. Recently, it has maintained 17-18 ha producing 400-500 MT of exportable product per year, which it ships to three clients on the Rungis market. After 14 years of production experience, Sobragui is discontinuing pineapple operations after the harvest of the 2007 crop. High cost of air freight, low revenues for ocean shipments, unreliable service from steamship companies, and lack of critical mass contributed to the company's decision.

### **DAFCO**

Also situated in Maferenya, DAFCO set out in 2002 to import *in vitro* planting material for the Queen Victoria variety (also known as Dubreka), a small, sweet, highly colored specialty pineapple. Commercial production of the variety then began in late 2003. After one year of export activity, principally directed toward Rungis, DAFCO suspended operations and is still reorganizing. Principal problems included management discontinuity (the founder returned to Europe in 2004), lack of financing, high input costs (especially diesel and agricultural chemicals), and the inability to concentrate small-holder production within a manageable radius.

### **Cooperative Burquiah**

This Morebayah-based grower cooperative was founded in 1991 but did not begin commercial shipments until the 2004-2005 season. Based on the support of five "founding families," each with holdings of one to three ha, the cooperative hopes to expand its network of suppliers to include a larger number of family growers with one-half to one ha. Its strategy is based on the delivery of a limited volume of high-quality Smooth Cayenne to Europe, Morocco, and Senegal, exclusively by air freight. In France, Burquiah eschews the traditional Rungis distribution model in favor of a regional wholesaler in Lyon.

In its first commercial campaign, Burquiah shipped 42 MT to France. In its second season, the cooperative had hoped to increase its exports to 270 MT drawn from nine ha of production. Unfortunately, its growers and affiliates applied nine ha's worth of fertilizer to a much broader area, thereby diluting the effect of the fertilizer. Because of this, the cooperative's growers were only able to produce 95 MT of exportable product during the 2005/2006 season. This volume was sent to France and Morocco.

### **SALGUIDIA**

Built in Maferenya in 1977 and rehabilitated in 1982 with funding from the governments of Guinea and Libya, the Societe Arabo-Libyenne-Guineene pour le Développement Industriel et Agricole (SALGUIDIA) reportedly boosted the pineapple industry in Guinée Maritime in its initial years of operation. At its peak, SALGUIDIA grew 80 percent of its pineapple on 300 irrigated ha out a total controlled acreage of 2,000 ha. The factory operated four separate lines to manufacture juice, pulp, and concentrate products based principally on pineapple,

citrus, and mango. The plant was designed to rely on the national energy grid for 70 percent of its electricity and an on-site 500 kWh generator for the remainder. Sales were directed to the Guinean market, with limited exports to Libya. A series of managerial and ownership restructurings led to the privatization of the plant and its 2002 sale to Société Nouvelle Tropicale, owned half by a Guinean investor and half by the governments of Guinea and Libya. During our visit in early May 2006, the plant was relatively clean but had clearly not been in full-scale operation for years. While management indicated that there had been some processing activity as recently as July 2005, this activity was neither large-scale nor long-term. Management identified several problems leading to the plant's disuse, including the government's failure to allow the plant to buy fuel free of VAT, unreliable electricity from the national grid, and the adverse effects of devaluation on the cost of imported materials, especially parts, equipment, cans, and other packaging materials.

### **Usine de Kankan**

This factory, inaugurated in 1967, was a collaboration between the governments of Guinea and Italy and operated as a state enterprise under the Touré regime. It features three production lines to convert citrus fruits into juice; purée mango, pineapple, banana, and tomato; and produce concentrates. Construction of the plant led to a surge in mango plantings within a 40 km radius of Kankan. With the end of the central planning system following the death of Sékou Touré, the plant was deeded to a group of private Guinean investors in the early 1980s, but ceased operations in 1991. During our visit in May 2006, the plant showed every sign of having been out of operation for 15 years. Meanwhile, the extensive mango plantings in the Siguiri/Kankan/Mandiana region continue to produce, and growers there struggle to find markets that will provide any value for their production.

### **Del Monte**

There has never been any commercial Del Monte operation in Guinea. There is, however, an oft-told tale of a visit to the country in the early 1990s by a management team from Del Monte Fresh, whose mission was to scout potential locations for a new pineapple project. The delegation explored several production zones then met with government officials. The team explained their project, expressed satisfaction with the agronomic conditions in Guinea, then asked the government for three concessions:

1. A long-term lease for the 500 ha of agricultural land attached to the Daboya project near Kindia.
2. A special zone within the port of Conakry to permit unobstructed access for two to three loading vessels each week.
3. A tax and import duty exemption for fuel to support a fleet of trucks to move fresh pineapple to port.

As the story goes, the Guinean government was unable to give Del Monte any clear answers to these three requests, at which point Del Monte went to Costa Rica to launch the MD-2 project, which has revolutionized the global fresh pineapple industry. We were unable to corroborate the Del Monte story with anyone in the Guinean government, but were surprised to learn, in meeting with the Ministry of Commerce, that the government would not, even today, be prepared to grant such requests. We were told that while land might be made available under favorable conditions, national legislation did not allow the government to provide tax exemptions for fuel imports, nor to extend exclusive use of a public facility to a

private company. Based on this exchange, we conclude that there are significant limitations on the government's willingness and ability to attract foreign direct investment in agricultural production.

## V. MD-2 CONVERSION

Current operating models, relying on fresh exports of Smooth Cayenne or on establishment of large-scale processing operations, hold little promise as break-out strategies for Guinea's pineapple sector. Establishment of a significant production of the MD-2, on the other hand, is far better suited to Guinea's particular combination of strengths and limitations in the horticultural sector. There is a window of opportunity for the emergence of a West African counterweight to Costa Rica as a major supplier of the EU market. Guinea is less invested, financially and culturally, in the Smooth Cayenne variety than its West African neighbors. As we will see in the investment analysis, it is well suited in production potential, costs, and geography to take advantage of the leap forward that this varietal offers.

The following proposal has a 36-month time frame for purchase and import of MD-2 planting material through propagation to create sufficient planting material for a 540-hectare commercial operation, up to an initial monthly harvest of 30 ha beginning in Month 37. Overall land requirements, depending on fallow requirements between MD-2 crop cycles, will probably be in the range of 1,600 ha. For purposes of this analysis, it is assumed that the government will make this acreage available to the project at the standard rent of FRG15,000 (US\$2.50) per ha per year.

The timeline of nursery operations, from initial establishment with imported plantlets in Month 1 through discontinuation in Month 35, is shown in Exhibit 7. Each 40-foot ocean container contains enough plantlets to establish five hectares in the nursery. Each hectare of nursery production would, at harvest beginning in Month 18, yield sufficient planting material for six hectares of commercial plantation. Nursery operations would continue until the initial 540-hectare cycle had been planted, at a rate of 30 commercial hectares per month. Once commercial harvest activities begin in Month 37, the model assumes that the harvested blocs will be left to generate sufficient planting material for the next 540-hectare production cycle. It may be necessary, depending on growth rates of the post-harvest planting material in the commercial blocs, to prolong the nursery activities for up to three to four months in order to give the harvested plants sufficient time to generate follower growth as planting material for the subsequent generation. This will not be known until the first production cycle is near completion, but, if necessary, would result in only \$9,500 in incremental costs for the life of the project.

Further assumptions about the costs and financial analysis in Section VI appear in Exhibit 8.

**Exhibit 7: Timeline of Hectares in Production from Establishment of Nursery to Initial Harvest**

YEAR	MONTH	NURSERY	COMMERCIAL	HARVEST	
1	1	5			
	2	10			
	3	15			
	4	20			
	5	25			
	6	30			
	7	35			
	8	40			
	9	45			
	10	50			
	11	55			
	12	60			
2	13	65			
	14	70			
	15	75			
	16	80			
	17	85			
	18	90			
	19	85		30	
	20	80		60	
	21	75		90	
	22	70		120	
	23	65		150	
	24	60		180	
3	25	55	210		
	26	50	240		
	27	45	270		
	28	40	300		
	29	35	330		
	30	30	360		
	31	25	390		
	32	20	420		
	33	15	450		
	34	10	480		

YEAR	MONTH	NURSERY	COMMERCIAL	HARVEST
	35	5	510	
	36	0	540	
4-10	37-120		540	30

## Exhibit 8: Underlying Assumptions

27.00 HA HARVESTED/MONTH  
TIMES  
60.00 MT/HA, PLANT CROP PRODUCTION

1620.00 MT/MONTH  
BY  
61.00 CTNS/MT (16.5 KG/CTN)

98820.00 CTNS/MONTH  
BY  
0.67 EXPORTABLE

66209.40 EXPORT CARTONS/MONTH  
BY  
1100.00 CARTONS PER FEU (@ 26 mt NET WEIGHT)

60.19 FEU/MONTH  
BY  
4.00 WEEKS/MONTH

15.05 FRESH FEU/WEEK

- D. CARTON IS IMPORTED FROM EUROPE AT A COST OF EUR 2.25/CTN, PLUS EU 0.55 TAX/FREIGHT IN GUINEA (JLB, SMURFIT)
- E. EACH CARTON CONTAINS AN AVERAGE OF 12 PINEAPPLES, EACH WITH AN AVERAGE WEIGHT OF 1.375 KG.
- F. EACH EXPORT PINEAPPLE BEARS A LABEL WHICH COSTS \$ 0.038/PIECE (EUR 0.03/PC)

## VI. INVESTMENT ANALYSIS

For simplicity's sake, this analysis assumes that the plantation will be owned and operated by a single large international fruit production and distribution company, such as Chiquita International or Dole Food Company. A more thorough review of political variables may lead call for some level of Guinean investment and/or out-grower involvement.

The investment begins with a consideration of nursery costs. Because there was no information available concerning the market for MD-2 planting material in West Africa, assume that procurement costs would be comparable to those in Costa Rica, where MD-2 suckers can be obtained for \$0.10 each. Additional charges of \$0.07/sucker have been added to allow for chemical treatment, transportation, handling, and customs. Planting materials will be imported in quantities sufficient for further nursery propagation, producing planting material at a ratio of six hectares of commercial suckers produced for each hectare of nursery planted.

Nursery operations will continue only until the 540 ha of commercial production have been fully planted. This will require some 90 ha of nursery, planted at a density of 60,000 suckers per hectare. Once commercial production begins, commercial plants will supply replanting material at a rate of 1.5 ha per hectare of commercial fruit production. This could fuel further expansion of the commercial project or improve project cash flow by selling off excess planting material. At a sell-out price equal to the original buy-in price of \$0.10/sucker, this could generate \$3,000 per harvested hectare, or \$1,080,000 per year. This potential revenue source has not been considered in project cash flows. Nursery operations would be initiated at a rate of five hectares planted per month (equivalent to the volume of suckers in a 40-foot container), leading eventually to a total of 90 ha of nursery over the initial 18-month pre-production phase. By the end of Month 36, dedicated nursery operations would cease and nursery land would be incorporated into the regular cycle of producing acreage. The costs and timeframe for nursery operations are shown in Exhibit 9.

Exhibit 10 outlines the costs of agricultural production per hectare, which would begin in Month 18, with nursery costs included (as "suckers,buy") for Month 19 through Month 36. Thereafter, the cost for sucker procurement and development disappears as commercial fruit production generates more than enough planting material to sustain the 540-ha growing area. Exhibit 11 lays out the hectares of nursery and commercial production by month and the monthly rate of harvest beginning in Month 37. It also provides a monthly detail of nursery, commercial production, and harvesting costs by month for the life of the project.

## Exhibit 9: Nursery Costs

### AA. ANNUAL AMORTIZATION OF INVESTMENT PER HA

	UNIT COST	SEASONS OF USE	COST/UNIT/SEASON	UNITS/HA	COST/SEASON/HA	COST PER SEASON
	FRG		FRG			USD
HAND TOOLS/SUPPLIES	690,000	2	345,000	2	668,500	\$117
MOTORIZED SOLO	1,000,000	3	333,333	1	333,333	\$58
MANUAL SPRAYER	200,000	3	66,667	1	66,667	\$12
SCALE	<u>3,000,000</u>	10	<u>300,000</u>	1	<u>300,000</u>	<u>\$53</u>
SUB-TOTAL	4,890,000		1,045,000		1,368,500	\$240

### BB. OPERATING COSTS

#### LAND PREP

CULTIVATION					200,000	\$35	
PLOWING					400,000	\$70	
SPRAYING					200,000	\$35	
BILLONAGE					200,000	\$35	
SUCKERS, BUY					45,084,000	\$10,200	YR 2-ONWARD = 0
SUCKERS, PREP					2,400,000	\$421	
FIELD LABOR					276,000	\$48	
STAKING/PLANTING					1,800,000	\$316	
RESETS					<u>12,000</u>	<u>\$2</u>	
SUB-TOTAL					50,572,000	\$11,163	

#### PRE-HARVEST

SOIL AMENDMENTS					1,250,000	\$219	
FERTILIZERS					7,500,000	\$1,316	
NEMATICIDE					450,000	\$79	
HERBICIDE					400,000	\$70	
INSECTICIDE					300,000	\$53	
APPLICATION LABOR					808,000	\$142	
FUEL, IRRIGATION PUMP					3,300,000	\$579	
PUMP MAINTENANCE					165,000	\$29	
FUEL, TIF					150,000	\$26	
SUPERVISION					7,920,000	\$1,389	
MISC LABOR					<u>308,000</u>	<u>\$54</u>	
SUB-TOTAL					22,551,000	\$3,956	

#### HARVEST

SUB-TOTAL					400,000	\$70	
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<b>GRAND TOTAL</b>	FARMGATE COST/HA				74,891,500	\$13,139	SEASON 1
	FARMGATE COST/KG @ YIELD = 60MT/HA				1,248	\$0.22	SEASON 1
<b>GRAND TOTAL</b>	FARMGATE COST/HA				29,807,500	\$2,939	SEASON 2 & BEYOND
	FARMGATE COST/KG @ YIELD = 60MT/HA				497	\$0.09	SEASON 2 & BEYOND

## Exhibit 10: Production Costs

### AA. ANNUAL AMORTIZATION OF INVESTMENT PER HA

	UNIT COST SEASONS OF USE		COST/UNIT/SEASON		UNITS/HA		COST/SEASON/HA		COST PER SEASON	
	FRG		FRG						USD	
HAND TOOLS/SUPPLIES	690,000	2	345,000	2	668,500				\$117	
MOTORIZED SOLO	1,000,000	3	333,333	1	333,333				\$58	
MANUAL SPRAYER	200,000	3	66,667	1	66,667				\$12	
SCALE	<u>3,000,000</u>	10	<u>300,000</u>	1	<u>300,000</u>				<u>\$53</u>	
SUB-TOTAL	4,890,000		1,045,000		1,368,500				\$240	

### BB. OPERATING COSTS

#### LAND PREP

CULTIVATION	200,000	\$35	
PLOWING	400,000	\$70	
SPRAYING	200,000	\$35	
BILLONAGE	200,000	\$35	
SUCKERS, BUY	45,084,000	\$10,200	YR 2-ONWARD = 0
SUCKERS, PREP	2,400,000	\$421	
FIELD LABOR	276,000	\$48	
STAKING/PLANTING	1,800,000	\$316	
RESETS	<u>12,000</u>	<u>\$2</u>	
SUB-TOTAL	50,572,000	\$11,163	

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SOIL AMENDMENTS	1,250,000	\$219
FERTILIZERS	7,500,000	\$1,316
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PUMP MAINTENANCE	165,000	\$29
FUEL, TIF	150,000	\$26
SUPERVISION	7,920,000	\$1,389
MISC LABOR	<u>308,000</u>	<u>\$54</u>
SUB-TOTAL	22,551,000	\$3,956

#### HARVEST

SUB-TOTAL	400,000	\$70
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<b>GRAND TOTAL</b>	FARMGATE COST/HA	74,891,500	\$13,139	SEASON 1
	FARMGATE COST/KG @ YIELD = 60MT/HA	1,248	\$0.22	SEASON 1
<b>GRAND TOTAL</b>	FARMGATE COST/HA	29,807,500	\$2,939	SEASON 2 & BEYOND
	FARMGATE COST/KG @ YIELD = 60MT/HA	497	\$0.09	SEASON 2 & BEYOND

## Exhibit 11: Production Acreage and Costs by Month

AA. HECTARES OF NURSERY PRODUCTION, COMMERCIAL PRODUCTION, AND HARVESTED BY CALENDAR MONTH  
 BB. AGGREGATE COSTS PER MONTH FOR NURSERY OPERATION, COMMERCIAL PRODUCTION, AND HARVESTING

		AA.			BB.				
		PRODUCTION HECTARES			NURSERY COSTS			PRODUCTION COSTS	HARVEST COSTS
YEAR	MONTH	NURSERY	COMMERCIAL	HARVEST	SUCKERS	AG	TOTAL		
1	1	5			\$51,000	\$800	\$51,800		
	2	10			\$51,000	\$1,600	\$52,600		
	3	15			\$51,000	\$2,400	\$53,400		
	4	20			\$51,000	\$3,200	\$54,200		
	5	25			\$51,000	\$4,000	\$55,000		
	6	30			\$51,000	\$4,800	\$55,800		
	7	35			\$51,000	\$5,600	\$56,600		
	8	40			\$51,000	\$6,400	\$57,400		
	9	45			\$51,000	\$7,200	\$58,200		
	10	50			\$51,000	\$8,000	\$59,000		
	11	55			\$51,000	\$8,800	\$59,800		
	12	60			\$51,000	\$9,600	\$60,600		
	<b>TOTAL</b>				<b>\$612,000</b>	<b>\$62,400</b>	<b>\$674,400</b>		
2	13	65			\$51,000	\$10,400	\$61,400		
	14	70			\$51,000	\$11,200	\$62,200		
	15	75			\$51,000	\$12,000	\$63,000		
	16	80			\$51,000	\$12,800	\$63,800		
	17	85			\$51,000	\$13,600	\$64,600		
	18	90			\$51,000	\$14,400	\$65,400		
	19	85	30			\$13,600	\$13,600	\$4,800	
	20	80	60			\$12,800	\$12,800	\$9,600	
	21	75	90			\$12,000	\$12,000	\$14,400	
	22	70	120			\$11,200	\$11,200	\$19,200	
	23	65	150			\$10,400	\$10,400	\$24,000	
	24	60	180			\$9,600	\$9,600	\$28,800	
	<b>TOTAL</b>				<b>\$306,000</b>	<b>\$69,600</b>	<b>\$450,000</b>	<b>\$100,800</b>	
3	25	55	210			\$8,800	\$8,800	\$33,600	
	26	50	240			\$8,000	\$8,000	\$38,400	
	27	45	270			\$7,200	\$7,200	\$43,200	
	28	40	300			\$6,400	\$6,400	\$48,000	
	29	35	330			\$5,600	\$5,600	\$52,800	
	30	30	360			\$4,800	\$4,800	\$57,600	
	31	25	390			\$4,000	\$4,000	\$62,400	
	32	20	420			\$3,200	\$3,200	\$67,200	
	33	15	450			\$2,400	\$2,400	\$72,000	
	34	10	480			\$1,600	\$1,600	\$76,800	
	35	5	510			\$800	\$800	\$81,600	
	36	0	540			\$0	\$0	\$86,400	
	<b>TOTAL</b>					<b>\$52,800</b>	<b>\$52,800</b>	<b>\$720,000</b>	
4	37		540	30			\$86,400	\$2,105	
-	38		540	30			\$86,400	\$2,105	
10	39		540	30			\$86,400	\$2,105	
	40		540	30			\$86,400	\$2,105	
	41		540	30			\$86,400	\$2,105	
	42		540	30			\$86,400	\$2,105	
	43		540	30			\$86,400	\$2,105	
	44		540	30			\$86,400	\$2,105	
	45		540	30			\$86,400	\$2,105	
	46		540	30			\$86,400	\$2,105	
	47		540	30			\$86,400	\$2,105	
	48		540	30			\$86,400	\$2,105	
	<b>TOTAL</b>						<b>\$1,036,800</b>	<b>\$25,263</b>	

Exhibit 12 breaks down packing costs. It is assumed that packing operations will follow a “field-pack” approach, with the packing facility located near the harvesting fields. Each 12x7 meter plant would have corner posts with a tarp roof for rain and sun protection. Underneath would be three distinct areas from front to back:

1. A “wet zone” where fruit would be received in harvesting baskets, dipped in a fungicide solution, then in a wax solution.
2. A “dry zone” where fruit would be laid out to dry, graded according to size and quality, labeled, and then packed into cardboard cartons.
3. A “carton zone” where knock-down cartons are stacked and assembled and where packed cartons are stacked on pallets to protect them.

In all, there would be six such plants, each capable of producing 1,100 packed cartons per eight-hour shift, although initial productivity need only be 500 cartons per shift. Average labor productivity is estimated at two packed cartons per man-hour, with 69 laborers per shift. Although much of the equipment (scales, pump, water troughs) used in each plant should last for several years, the frequent movement and rough handling to which this equipment will be subjected will probably limit its useful life. As a result, this analysis assumes all equipment will be replaced each year.

Exhibit 13 explores the costs associated with the ocean freight of the export portion of the project’s production. The freight rate, provided by Maersk Line/Conakry, is valid to all European base ports. Ancillary charges are as follows:

- **Genset purchase.** Rather than construct free-standing cold-storage facilities, the project plans to use 40-foot refrigerated containers to sustain the cold chain post-harvest. The containers will be provided by Maersk Line but the mobile generator units must be provided by the user. These units will enable reefers to hold pineapples at temperature from the time they are loaded into the containers in the field until the containers are stacked in the Conakry container yard and plugged into shore power. Because Maersk has two weekly European sailings and the project will require only seven to eight 40-foot equivalent units per sailing, the 20 gensets in the project’s fleet provide more than 100 percent redundancy. Given operating conditions in Guinea, this is probably not excessive.
- **Diesel fuel.** To fuel the gensets for the 24 hours between field loading and delivery to the container yard in Conakry.
- **Delivered-in charge.** Maersk Line charges \$150/day of dwell time (the days a loaded container resides in Maersk’s container yard before loading onto the outbound vessel).

## Exhibit 12: Packing Costs

ALL VALUES IN USD

		UNIT COST	UNITS	TOTAL COST
<b>EQUIPMENT:</b>	1 ROOF TARPAULIN, 12m x 7m			
		\$0.60/SQ M		
	2 TABLE			
	STEEL, 3m x 1m	\$ 150.00	4	\$ 600.00
	3 WATER TROUGHS			
	ALUMINUM 3m x 1m	\$ 600.00	4	\$ 2,400.00
	4 SCALES			
		\$ 530.00	4	\$ 2,120.00
	5 WATER PUMP			
		\$ 5,260.00	1	\$ 5,260.00
6 MISCELLANEOUS/OVERAGES				
	10%		\$ 1,043.00	
TOTAL, EQUIPMENT			\$ 11,473.00	
			BY	
CARTONS PER SHED (ASSUMES 6 SHEDS)			132,000	
TOTAL EQUIPMENT PER CARTON			\$0.09	
			PER CARTON	
<b>MATERIALS</b>	1 FUNGICIDE 1 KG =	1400 CTNS	\$ 45.00	\$ 0.03
	2 LIQUID WAX 1 BARREL =	6,800 CTNS	\$ 505.00	\$ 0.07
	3 STRAPS 1 ROLL =	2700 CTNS	\$ 236.00	\$ 0.09
	4 PALLETS 1 PALLET =	55 CTNS	\$ 10.00	\$ 0.18
	TOTAL MATERIALS PER CARTON			\$ 0.38 PER CARTON
<b>LABOR</b>	ASSUME	PRODUCTIVITY = 2 CARTONS PER MAN PER HOUR		
		69 MAN/DAYS PER 8-HOUR SHIFT TO PACK		
		1100 CARTONS		
		EACH MAN/DAY = \$0.71	PER DAY	
TOTAL LABOR		\$ 50.00	\$ 0.05	
			EQUIPMENT	\$ 0.09
			MATERIAL	\$ 0.38
			LABOR	\$ 0.05
<b>TOTAL PACKING COST</b>				\$ 0.51

### Exhibit 13: Ocean Freight and Ancillary Charges

	EUR/FEU	USD/FEU
BASE OCEAN FREIGHT RATE	3,500.00 €	\$4,268.29
BUNKER SURCHARGE	384.00 €	\$468.29
SECURITY FEE	12.00 €	\$14.63
<b>TOTAL FREIGHT CHARGE</b>	<b>3,896.00 €</b>	<b>\$4,751.22</b>
ANCILLARY CHARGES		
GENSETS	\$ 300/DAY	LEASE RATE
FUEL	\$200/DAY	200 LITERS OF DIESEL PER DAY AT \$1.00/LITER
IN PORT	\$150/DAY	PER DAY PLUGGED IN AT PORT
PURCHASE COST		
GENSETS	\$3,500.00	REFURBISHED DIESEL GENERATOR, FOUR-YEAR LIFE
AA. OCEAN FREIGHT COMPONENT	\$4,751.22	ALL-IN CHARGE
DIVIDED BY	<u>1,100</u>	CARTONS PER FEU
	<b>\$4.32</b>	OCEAN FREIGHT PER CARTON
BB. PURCHASE OF 20 GENSETS IN YEAR 4 AND IN YEAR 8	\$3,500.00	COST PER GENSET
TIMES	<u>40</u>	2 PURCHASES OF 20 EACH ROUND
	\$140,000.00	GENSET INVESTMENT
TIMES	<u>1.80</u>	ASSUME 20% MAINTENANCE CHARGE/YEAR
	\$252,000.00	
DIVIDED BY	<u>5,525,673</u>	CARTONS EXPORTED DURING THE 10-YEAR PROJECT
	<b>\$0.05</b>	GENSET CHARGE PER CARTON
CC. DIESEL FUEL REQUIREMENTS		1 DAY UNDER POWER BEFORE DELIVERY TO PORT
TIMES	<u>\$200.00</u>	COSTS OF DIESEL FUEL PER 24-HOUR PERIOD (200 LTRS/DAY @ \$1.00/LTR)
	\$200.00	
DIVIDED BY	<u>1,100</u>	CARTONS PER FEU
	<b>\$0.18</b>	DIESEL CHARGE PER CARTON
DD. DELIVERED-IN CHARGE		3 DAYS AVERAGE DWELL TIME, CONAKRY
TIMES	<u>\$150.00</u>	REEFER USE CHARGE/24-HOUR PERIOD
	\$450.00	
DIVIDED BY	<u>1,100</u>	
	<b>\$0.41</b>	REEFER USE CHARGE PER CARTON
EE. SUMMARY		\$4.32 OCEAN FREIGHT PER CARTON
		\$0.05 GENSET CHARGE PER CARTON
		\$0.18 DIESEL CHARGE PER CARTON
		<u>\$0.41</u> REEFER USE CHARGE PER CARTON
	<b>\$4.96</b>	OCEAN FREIGHT & ANCILLARY CHARGES

Exhibit 14 shows the components and costs of field and general supervision for the project, including transportation costs. Vehicle acquisition costs appear in Exhibit 17.

Exhibit 15 spells out the pricing assumptions used in the economic model for this proposal. Based on discussions and statistics assembled during two visits to the Rungis market in Paris in May 2006, there is a material difference between the sales prices for vessel shipments of Costa Rican MD-2 and for Smooth Cayenne from Côte d'Ivoire. Over the final three months of 2004, Costa Rica realized revenues per kilogram that were 30 percent greater than those of Côte d'Ivoire. During 2005, this differential ranged as high as 47 percent and averaged 24 percent for the year. This analysis assumes that exported MD-2 from Guinea will sell at a price midway between the Costa Rica MD-2 and Côte d'Ivoire Smooth Cayenne prices, yielding an average price of EUR 0.98, or \$1.19, per kilogram. Because 33 percent of the total harvested weight is expected to fall outside of export quality standards, this portion of the total harvest is forecast to yield FRG 750/kg, which is the average local price for Smooth Cayenne in the Guinea home market.

Exhibit 16 shows aggregate margins for each of the 10 years of the project. Beginning with negative results of \$909,085, \$785,485, and \$1,007,485 during the project's first three years (the nursery and commercial growing-out phases of the project), the operation turns profitable in Year 4 with margins of \$4,945,545 forecast for each of the seven post-harvest years of the project. Year 4 margins allow a full recovery of all pre-harvest operating costs incurred in the initial three years of the project. By the end of Year 10, the project is expected to generate cumulative margins of \$31,916,759.

The project's internal rate of return (IRR) was then calculated by comparing the initial capital investment (Exhibit 17) with year-by-year operating results, including the first three years of the project where there are no revenues to offset operating costs. The IRR is defined as the rate at which future operations inflows would need to be discounted in order to equal the initial capital investment. In other words, it represents the implicit interest rate that future cash flows will yield against the project's initial investment. The aggregate margins produced by the project over the course of its 10-year life combine to generate a return of 57 percent (Exhibit 18). Sensitivities were then performed to evaluate the effect of changes in cost and revenue assumptions on the project's IRR. In the first iteration, revenues were reduced by 25 percent over the life of the project. The recalculation based on these gross margins yielded an IRR of 19 percent. With costs, these were inflated by 25 percent over the life of the project, including the initial three revenue-free years. On this basis, the resulting IRR remained at a vigorous 38 percent.

## Exhibit 14: Costs of Supervision

PERSONNEL COSTS	QUANTITY	PER UNIT PER MONTH	PER YEAR
1 GENERAL MANAGER (EXPATRIATE)	1	\$2,000	\$24,000
2 LOCAL MANAGERS	5	\$1,000	\$60,000
3 FIELD SUPERVISORS	23	\$150	\$41,400
4 OFFICE STAFF	10	<u>\$70</u>	<u>\$8,400</u>
			\$133,800
<b>MATERIALS</b>			
1 FUEL FOR VEHICLES	LITERS/MONTH		
(5500 GNF/LITER)			
4WD SUV	300 1	\$290	\$3,474
PICK-UPS	300 5	\$290	\$17,370
MOTORCYCLES	250 23	\$241	<u>\$66,585</u>
			\$87,429
2 VEHICLE MAINTENANCE			
4WD SUV	1	\$70	\$840
PICK-UPS	5	\$70	\$4,200
MOTORCYCLES	23	\$16	\$4,416
			\$9,456
TOTAL - SUPERVISION			\$230,685

HEAD COUNT SUMMARY	LOCAL MANAGERS	FIELD SUPERVISORS	
ADMINISTRATION	1	0	ACCOUNTING/OFFICE MANAGEMENT
NURSERY/TRANSPLANT	1	3	(RESPONSIBILITY FOR 10 HA/MONTH)
PRODUCTION	1	11	(RESPONSIBILITY FOR 50 HA)
HARVEST	1	3	(RESPONSIBILITY FOR 10 HA/MONTH)
PACKING	1	6	(RESPONSIBILITY FOR 1 PACKING SHED)
	5	23	

## Exhibit 15: Comparative Sales Prices, Rungis Market

MARKET PRICES, MD II VS SMOOTH CAYENNE  
 PRICES IN EURO/KG, VOLUMES IN MT  
 OCEAN CONTAINER SHIPMENTS  
 RUNGIS MARKET

	2005					2004					2003				
	C.R. MD II	C.d'l. CAYENNE	DIFF	IMPORT VOLUME	VOLUME/ MONTH	C.R. MD II	C.d'l. CAYENNE	DIFF	IMPORT VOLUME	VOLUME/ MONTH	C.R. MD II	C.d'l. CAYENNE	DIFF	IMPORT VOLUME	VOLUME/ MONTH
JANUARY	€ 1.19	€ 0.81	47%	1631	9%	NA	€ 1.14	NA	1082	7%	NA	€ 1.05	NA	1212	8%
FEBRUARY	€ 1.39	€ 1.08	29%	1451	8%	NA	€ 1.04	NA	1122	7%	NA	€ 0.96	NA	1011	6%
MARCH	€ 1.37	€ 1.08	27%	1624	9%	NA	€ 1.05	NA	1648	10%	NA	€ 1.11	NA	2088	13%
APRIL	€ 1.33	€ 0.96	39%	1347	8%	NA	€ 1.04	NA	1839	11%	NA	€ 1.15	NA	1579	10%
MAY	€ 1.06	€ 0.85	25%	1067	6%	NA	€ 1.00	NA	1408	9%	NA	€ 1.15	NA	1332	9%
JUNE	€ 1.00	€ 0.85	18%	1664	9%	NA	€ 1.00	NA	1274	8%	NA	€ 1.10	NA	1140	7%
JULY	€ 0.85	€ 0.86	-1%	1108	6%	NA	€ 0.90	NA	860	5%	NA	€ 1.05	NA	987	6%
AUGUST	€ 0.93	€ 0.82	13%	850	5%	NA	€ 0.75	NA	1090	7%	NA	€ 1.07	NA	656	4%
SEPTEMBER	€ 1.01	€ 0.72	40%	1270	7%	NA	€ 0.76	NA	958	6%	NA	€ 1.20	NA	904	6%
OCTOBER	€ 0.98	€ 0.78	26%	1424	8%	€ 1.07	€ 0.80	34%	1132	7%	NA	€ 1.02	NA	1560	10%
NOVEMBER	€ 0.80	€ 0.78	3%	1889	11%	€ 1.25	€ 0.84	49%	1766	11%	NA	€ 0.91	NA	1184	8%
DECEMBER	€ 0.89	€ 0.81	10%	2293	13%	€ 1.22	€ 0.84	45%	1878	12%	NA	€ 0.96	NA	1971	13%
AVERAGE	€ 1.08	€ 0.87	24%	17618	100%	€ 1.21	€ 0.93	30%	16057	100%	NA	€ 1.06	NA	15624	100%
EUR0/16.5 KG CTN	€ 17.82	€ 14.36				€ 19.97	€ 15.35				€ 17.49				
USD/16.5 KG CTN	\$21.73	\$17.51				\$24.35	\$18.71				\$21.33				

### ASSUMPTIONS

- 1 EXPORT GUINEA MD II (67%) SELLS AT PRICE INTERMEDIATE BETWEEN THAT OF COSTS RICA GOLD (MD II) AND COTE D'IVOIRE SMOOTH CAYENNE, = \$19.60/CARTON, OR \$1.19/KG
- 2 DOMESTIC GUINEA MD II (33%) SELLS AT LOCAL MARKET PRICE OF FRG 750/KG, EQUIVALENT TO \$0.13/KG

## Exhibit 16: Aggregate Margins

ALL VALUES IN USD	YEAR 1		YEAR 2		YEAR 3		YEAR 4		YEAR 5		YEAR 6		YEAR 7		YEAR 8	
	PER KG	TOTAL	PER KG	TOTAL	PER KG	TOTAL	PER KG	TOTAL	PER KG	TOTAL	PER KG	TOTAL	PER KG	TOTAL	PER KG	TOTAL
<b>PRODUCTION</b>																
HA IN PRODUCTION		0		180		540		540		540		540		540		540
HA HARVESTED		0		0		0		360		360		360		360		360
# OF KG HARVESTED	0	0	0	0	0	0		19,440,000		19,440,000		19,440,000		19,440,000		19,440,000
# OF KG EXPORTED								13,024,800		13,024,800		13,024,800		13,024,800		13,024,800
# OF CTNS EXPORTED								789,382		789,382		789,382		789,382		789,382
# OF KG LOCAL								6,415,200		6,415,200		6,415,200		6,415,200		6,415,200
<b>REVENUES</b>																
EXPORT								\$1.185	\$15,434,388	\$1.185	\$15,434,388	\$1.185	\$15,434,388	\$1.185	\$15,434,388	\$1.185
LOCAL								\$0.130	\$833,976	\$0.130	\$833,976	\$0.130	\$833,976	\$0.130	\$833,976	\$0.130
TOTAL REVENUES								\$16,268,364	\$16,268,364	\$16,268,364	\$16,268,364	\$16,268,364	\$16,268,364	\$16,268,364	\$16,268,364	\$16,268,364
<b>COSTS</b>																
LAND RENTAL		\$4,000		\$4,000		\$4,000		\$4,000		\$4,000		\$4,000		\$4,000		\$4,000
NURSERY		\$674,400		\$450,000		\$52,800		\$0		\$0		\$0		\$0		\$0
FRUIT PRODUCTION				\$100,800		\$720,000		\$1,036,800		\$1,036,800		\$1,036,800		\$1,036,800		\$1,036,800
HARVEST							\$0.001	\$25,272	\$0.001	\$25,272	\$0.001	\$25,272	\$0.001	\$25,272	\$0.001	\$25,272
PACKING							\$0.032	\$410,281	\$0.032	\$410,281	\$0.032	\$410,281	\$0.032	\$410,281	\$0.032	\$410,281
LABELS							\$0.033	\$425,911	\$0.033	\$425,911	\$0.033	\$425,911	\$0.033	\$425,911	\$0.033	\$425,911
CARTON							\$0.207	\$2,700,263	\$0.207	\$2,700,263	\$0.207	\$2,700,263	\$0.207	\$2,700,263	\$0.207	\$2,700,263
TRANSPORT							\$0.021	\$267,008	\$0.021	\$267,008	\$0.021	\$267,008	\$0.021	\$267,008	\$0.021	\$267,008
OCEAN FREIGHT							\$0.300	\$3,907,440	\$0.300	\$3,907,440	\$0.300	\$3,907,440	\$0.300	\$3,907,440	\$0.300	\$3,907,440
SALES & MKTG (15%)							\$0.178	\$2,315,158	\$0.178	\$2,315,158	\$0.178	\$2,315,158	\$0.178	\$2,315,158	\$0.178	\$2,315,158
SUPERVISION		\$230,685		\$230,685		\$230,685		\$230,685		\$230,685		\$230,685		\$230,685		\$230,685
TOTAL COSTS		\$909,085		\$785,485		\$1,007,485		\$11,322,819		\$11,322,819		\$11,322,819		\$11,322,819		\$11,322,819
ANNUAL NET MARGIN		-\$909,085		-\$785,485		-\$1,007,485		\$4,945,545		\$4,945,545		\$4,945,545		\$4,945,545		\$4,945,545
CUMULATIVE NET MARGIN		-\$909,085		-\$1,694,570		-\$2,702,055		\$2,243,490		\$7,189,035		\$12,134,579		\$17,080,124		\$17,080,124
1 LAND RENTAL	1600 HA @ FRG 15,000 (\$2.50) PER HA PER YEAR															
2 NURSERY	YEAR 1: 5 HA/MONTH PLANTED AT A COST OF \$10,200/HA FOR SUCKERS + \$190/HA/MONTH FOR GROWING COSTS YEAR 2: SAME AS YEAR 1 FOR THE FIRST 6 MONTHS, THEN NURSERY SURFACE DECREASED BY 5 HA/MONTH AS PLANTING MATERIAL IS TRANSFERRED TO COMMERCIAL FIELDS YEAR 3: SAME AS SECOND HALF OF YEAR TWO FOR THE ENTIRE YEAR, AT THE END OF WHICH NURSERY OPERATIONS CEASE															
3 FRUIT PRODUCTION	YEAR 1: NO ACTIVITY YEAR 2: TRANSPLANT ACTIVITIES BEGIN IN MID-YEAR AT A RATE OF 30 HA/MONTH, AT A COST OF \$190/HA/MONTH YEAR 3: TRANSPLANT ACTIVITIES AND FIELD CULTIVATION CONTINUE THROUGHOUT THE YEAR YEAR 4: HARVEST OPERATIONS BEGIN IN FIRST MONTH, WITH RE-PLANTING FOLLOWING IMMEDIATELY THEREAFTER															
4 HARVEST	\$70/HA HARVESTED															
5 PACKING	PER EXHIBIT 12															
6 LABELS	INDIVIDUAL FRUIT LABEL ON ALL EXPORT FRUIT, AT A COST OF EUR 4,500 FOR 100,000 LABELS, WITH AN AVERAGE OF 12 PIECES PER CARTON (BOURQUIAH)															
7 CARTON	IMPORTED FROM EUROPE AT A UNIT COST OF EUR 2.25, PLUS EUR 0.55 PER UNIT FOR TAXES AND CUSTOMS CLEARANCE. = EUR 0.17/KG = \$ 0.207/KG (BOURQUIAH)															
8 TRANSPORT	110 KM (KINDIA-CONAKRY) + 200 KM (LE HAVRE-PARIS) @ \$ 1.20/KM (\$2.00/MILE) PER FEU = \$372/FEU = \$0.02/KG															
9 OCEAN FREIGHT	PER EXHIBIT 14															
10 SALES & MARKETING	ASSUMES A COST OF 15% OF THE GROSS SALES PRICE AT DESTINATION															
11 SUPERVISION COSTS	PER EXHIBIT 13															



## Exhibit 18: IRR Calculations And Sensitivities

A BASE CASE	YEAR	MARGIN
	0	-\$1,000,000
	1	-\$909,085
	2	-\$785,485
	3	-\$1,007,485
	4	\$4,945,545
	5	\$4,945,545
	6	\$4,945,545
	7	\$4,945,545
	8	\$4,945,545
	9	\$4,945,545
	10	\$4,945,545
	<b>IRR =</b>	<b>57%</b>
<b>B. DECREASE REVENUES BY 25%</b>		
	0	-\$1,000,000
	1	-\$909,085
	2	-\$785,485
	3	-\$1,007,485
	4	\$878,454
	5	\$878,454
	6	\$878,454
	7	\$878,454
	8	\$878,454
	9	\$878,454
	10	\$878,454
	<b>IRR =</b>	<b>19%</b>
<b>C. INCREASE COSTS BY 25%</b>		
	0	-\$1,000,000
	1	-\$1,236,356
	2	-\$981,856
	3	-\$1,259,356
	4	\$2,114,840
	5	\$2,114,840
	6	\$2,114,840
	7	\$2,114,840
	8	\$2,114,840
	9	\$2,114,840
	10	\$2,114,840
	<b>IRR =</b>	<b>38%</b>
<b>D. FIVE-YEAR RETURN</b>		
	0	-\$1,000,000
	1	-\$909,085
	2	-\$785,485
	3	-\$1,007,485
	4	\$4,945,545
	5	\$4,945,545
	<b>IRR =</b>	<b>36%</b>

## VII. SUMMARY AND RECOMMENDATIONS

The fresh market in Western Europe does not need another West African supplier of Smooth Cayenne pineapples. In fact, reports from Ghana and Côte d'Ivoire and price performance on the Rungis market indicate that supplies already exceed demand. On the other hand, the market for MD-2 pineapples continues to grow at the expense of the Smooth Cayenne, and West Africa has yet to effectively respond to this transition. While Costa Rica's market position and cost competitiveness may seem insurmountable, disruptive events regularly befall tropical horticulture and no retailer, wholesaler, or importer should limit its supplies to only one country of origin. Moreover, importers and retailers encourage multiple sources to insure that their price and service levels remain responsive to competitive market forces. The analysis of cost and revenue potential in Guinea shows promising results for an extensive planting of MD-2.

There are several steps before the merits of this proposal can be accurately assessed. First, the project must find an investor. There is a finite pool of companies with sufficient experience and financial wherewithal to take on a multimillion-dollar project such as this. Compagnie Fruitière, Dole, Chiquita, Del Monte, and Katope are obvious contenders, though there are surely other, less-obvious candidates. Such a campaign would require additional detail beyond the scope of this report.

Second, the project will require a far more detailed agronomic evaluation of soils, moisture, pests, and temperatures to confirm that Guinea does indeed provide the necessary conditions for successful cultivation of the MD-2.

In addition, the prospectus should review not only the ability of Guinea to generate an acceptable IRR on this project but also the relative performance of Guinea versus its obvious competitors in West Africa (Cameroon, Senegal, Ghana, Côte d'Ivoire) as the site for such a project.

Finally, the package would be significantly strengthened by the active involvement of the Guinean government, including an outline of the specific incentives that could be granted to an investor in return for tackling a project of this magnitude. While we were unable to uncover any such incentive scheme during visits with government officials, our discussions were hypothetical in nature. It remains to be seen what the government's response would be, in terms of incentives and concessions, if a serious investor prepared a concrete proposal involving hundreds of jobs and millions of dollars in export earnings.

## **APPENDIX: TERMS OF REFERENCE**

### **SCOPE OF WORK**

#### **INVESTMENT ANALYSES — FRESH PINEAPPLES AND FRESH MANGOS**

##### **Introduction**

The GAMLA project has targeted fresh pineapples and fresh mangos as two export agribusinesses to be supported and strengthened by the project. Our main objective is to increase exports of these commodities and to demonstrate that export agribusiness is a viable model for Guinea's economic development.

We work along the value chain of each commodity to solve problems and remove constraints. Furthermore, we have compiled a considerable amount of background information on each of these agroindustries in Guinea. This information includes a pre-feasibility study for each commodity and a value chain analysis of the costs incurred at each point along the chain.

The next activity will be to perform an investment analysis to determine the amount of financial return an investor could expect from an investment in each of these two agribusinesses.

##### **Work To Be Carried Out**

The activities to be carried out under this scope of work are centered on analyzing the investment potential of fresh pineapples and fresh mangos exported from Guinea by container ship, as well as by air freight, to European markets. A separate analysis must be carried out for each commodity. The analyses will consider exports by container ship as the "core" business, while air freight shipments will be made to take advantage of niche markets or of seasonal increases in market prices. Since both these commodities have a seasonal production calendar, the consultant will develop investment models composed of the sequential production of additional commodities that complement the core businesses of exporting fresh pineapples and fresh mangos. In this manner, each export operation will be carried out on a year-round basis. It will be up to the consultant to decide which crops could be produced to complement the core businesses of exporting fresh mangos and fresh pineapples.

In the case of fresh pineapples, the normal practice in Guinea is to harvest from mid-October until mid-May, thereby avoiding harvesting during the rainy season. This appears to be a custom in Guinea, and is apparently based on neither production nor market analysis. One of the tasks of the consultant while carrying out the pineapple analysis will be to analyze the possibility of year-round production and to make recommendations on the possibility of exporting pineapples during the entire year.

The following production calendar is presented as an illustrative example of how year-round exports could take place by the process of shipping different products at different seasons of the year. For example, seasonal mango exports could be phased with the export of potatoes, along with the production and export of winter vegetables. Similarly, seasonal pineapple exports could be combined with the seasonal export of mangos and potatoes.

## Illustrative Production Calendar for Guinea

Jan	Fev	Mars	Avril	Mai	Juin	Juill	Aout	Sep	Oct	Nov	Dec
Pineapple										Pineapple	
			Mango								
		Melon									
Cherry Tomato										Cherry Tomato	
							Potato (regional)				
Chili peppers									Chili peppers		
Other vegetables									(okra, squash, etc.)		

### Pineapple Investment Analysis

The consultant will conduct a 10-year investment analysis from the point of view of an international investor who develops a fresh pineapple production and shipping operation in Guinea of a sufficient size to serve a targeted market on a continuing basis (e.g. an average of one container load of pineapples exported every day during the production season). The investor will produce pineapples in Guinea for sale to markets in Europe, North Africa, and the Middle East. Fruit that is too small or otherwise does not meet export quality standards will be sold into local or regional markets. Fruit produced by the investor will be supplemented as needed by out-grower contracts with small-scale pineapple farmers.

The investment scenario must be based on the reality of actual pineapple production in Guinea, not a generic production model. In other words, the investment should be site-specific and must consider any assets (buildings; equipment) that could be made available to a foreign investor by agencies within the government of Guinea. Furthermore, in view of the limited resources available to small farmers in Guinea, all chemical products and irrigation equipment used by out-growers must be financed by the exporter.

The analytical method used must determine the internal rate of return. This method computes the interest rate that makes the net present value of all cash flows related to the investment equal to zero.

A sensitivity analysis must also be conducted, under the assumption that the market price for the final product sold, as well as the cost of raw materials, would increase and also decrease by 15 percent.

All assumptions in the investment analysis should be clearly stated.

As stated earlier, the consultant should make recommendations on the year-round production of pineapples in Guinea.

The analysis should address the following elements:

- Plant varieties
- Sources of planting material
- Land preparation
- Treatment of planting material
- Plant density
- Planting

- Irrigation
- Fertilizers
- Crop culture, plant protection
- De-suckering ratoon crop
- Flower inducement
- Crop cycle
- Harvesting
- Post-harvest handling
- Marketing and export
- Prices
- Production/export yield
- Out-grower production
- Economic life of plantation
- Financing
- Management structure
- Land rental
- Asset requirements and purchases

The investment analysis will be carried out by an international consultant with the assistance of a local consultant who is a specialist in pineapple production.

### **Mango Investment Analysis**

The mango investment analysis should consider the export of fresh mangos by sea container as the core business, with additional exports based on the production of crops that complement the mango production season. The business model for mango exports will be based on the purchase of fruit from independent growers; however, it should be assumed that the exporter will finance the cost of orchard maintenance by its affiliated growers during the growing season. The cost of orchard maintenance will be recovered from the payments for fruit purchased from the affiliated growers.

The investment required for the core business of mango exports will include cold rooms, grading and selecting equipment, a standby generator, passenger vehicles, communications equipment, and product handling equipment such as fork lifts. To the extent possible, this equipment would be used to export additional commodities as well. However, should specialized facilities and equipment be required for the additional commodities, these investments must also be considered in the analysis.

The mango investment model must consider the production and export of additional commodities such as those shown in the above calendar that will complement the core business of mango exports. The analysis of the investment required for each additional commodity, along with their income and expense projections, should be presented separately. However, a consolidated analysis must be presented that incorporates the financial results of the investment in mangos combined with those of all other seasonal commodities. The international consultant will recommend for consideration by GAMLA the mix of commodities to be included in the consolidated investment analysis.

Depending on their production complexity, the additional crops considered in the analysis may be produced by the exporter, by out-growers working under the close supervision of the exporter, or some combination of the two. The crop production mix used in the analysis will be recommended by the consultant for approval by GAMLA. In the case of some crops, such

as potatoes, the model may well assume that the packaging and storage facility will be used merely for sorting, packaging, and cold storage of the commodity as a service provided under contract to third parties.

Similar to that indicated for the pineapple investment analysis, the analytical method used for the mango analysis must determine the internal rate of return. A sensitivity analysis must also be conducted, under the assumption that the market price for the final product sold, as well as the cost of raw materials, would increase and also decrease by 15 percent.

As with pineapples, all assumptions in the mango analysis must be clearly stated.

The investment analysis will be carried out by an international consultant with the assistance of a local consultant who is a specialist in horticulture production.

Separately, a specialist from the Fulaya Agricultural Research Center has been hired to develop crop budgets for each of the possible additional crops. This information will be provided to the consultants for their use in these analyses.

## **Reports**

An illustrative description of the contents of each report is the following:

- Title page
- Abbreviations used
- Table of contents
- Executive summary
- Introduction
- Background
- Investment analysis
- Conclusions and recommendations
- Annex:
  - Consultant's scope of work
  - List of documents reviewed
  - Names and contact information of people met

A Times New Roman font, size 12, should be used for the text of the report. The report should be written in French.

The two reports (the Pineapple Investment Analysis and the Mango Investment Analysis) should be submitted separately.

All cost and revenue numbers should be converted into US dollars (\$US) and the exchange rates specified for the different national currencies.

## **Level of Effort**

A level of effort of 33 working days (including three travel days) is authorized for this work by the international consultant. A level of effort of 30 working days is authorized for this work by the local consultant.

## **Completion Date**

The final completion date for both reports is June 1, 2006.