Assistance à la Dynamisation de l'Agribusiness au Rwanda

CONSIDERATIONS FOR INITIATING A SPECIALITY COFFEE INDUSTRY IN RWANDA

Prepared by :

Chemonics International Inc.
1133 20th Street, NW
Washington, DC. 20036

Under the:

ADAR Project

Contract # PCE-1-807-00003-00

June 2002

TABLE OF CONTENTS

I. INTRODUCTION **1**

1.1 PREVIOUS EVALUATIONS 1
1.2 CONSIDERATIONS FOR ENTERING MARKETS FOR QUALITY COFFEE 3

II. OBSERVATIONS REGARDING THE CURRENT RWANDAN COFFEE SECTOR **6**

2.1 IMPRESSIONS REGARDING COFFEE PRODUCTION 6
2.2 CAPABILITIES OF COFFEE WASHING STATIONS [SOW TASK NO. 1] 8
2.2.1. Contrasting East African and Central American Coffee Washing Systems8 (Wet Milling) *8*
2.2.2 ADAR's Clients Washing Stations: Comments and Recommendations Based on Observations and Discussions *10*

III. DISCUSSION AND RECOMMENDATIONS **19**

3.2 THE FLOW OF QUALITY COFFEE FROM FIELD TO MARKET [SOW TASK NO. 4] 20
3.2.1 Coffee Ownership *20*
3.2.3 Producing for Quality Markets *25*
3.3 MARKET ORIENTATION AND MANAGEMENT OF THE FLOW OF COFFEE FROM FARM TO WASHING STATION: PROBLEMS ASSOCIATED WITH LARGE NUMBERS OF SMALL PRODUCERS [SOW TASK NO. 5] 27
3.3.1 Small Producers Selling Quality Cherry *28*
3.3.2 Small Producers Delivering Quality Cherry *29*
3.4 APPROACHES AND ACTIVITIES OF ADAR POSITIVELY AFFECT THE COMMERCIAL PERFORMANCE OF ITS TARGETED INVESTORS/OPERATORS [SOW TASK NO. 3] 31
3.4.1 Technical Assistance *32*
3.4.2 Education and Training *33*
3.4.3 Technical Support *34*
3.4.4 Logistical Support *37*
3.5 BUYER LIST AND DESCRIPTION FOR MARKETING FUTURE COFFEE [SOW TASK NO. 6] 37

ANNEX I : SCOPE OF WORK AND DELIVERABLES **40**

CONSIDERATIONS FOR INITIATING A SPECIALTY COFFEE INDUSTRY IN RWANDA

Although its production costs are low compared to other arabica-producing countries, high processing and transport costs will make it difficult for Rwanda to compete with Brazil, Vietnam and others in low quality markets. Thus, Rwanda's strategy should not be a simple expansion of its coffee production, but rather to **develop a *quality* coffee industry**.

CONCLUSIONS FROM THE EVALUATION

I do not think that the customary Executive Summary is applicable in the case of a report that includes a great number of observations and recommendations. Rather, I believe it is probably more appropriate to briefly state conclusions as to the rationale and feasibility of developing a quality coffee industry in Rwanda.

First and foremost **it is evident that Rwanda's production potential and the opportunities in the market offer excellent prospects of successfully competing in quality markets**. The country's physical attributes of altitude, soil and rainfall are ideal for quality coffee production. This natural potential is borne out by the cupping results on coffees from this past harvest. However, there are two primary areas that need considerable attention if Rwanda will achieve a significant volume of quality coffee exports, at correspondingly favorable prices and an equitable distribution of those prices among *producers*, processors and exporters.

A course of action begun recently and strongly supported by donors (e.g. the ADAR, ACDI/VOCA and PEARL projects, as well as European Community activities) is to create a central washing capacity to increase the volume and uniformity of quality coffee. There is ample evidence in other countries demonstrating this to be one of the successful options to achieve quality. I also believe that this strategy is one of the most practical in the case of Rwanda, where producing quality will be complicated by the:

- very low output of the micro-grower
- lack of quality orientation in the entire production-marketing chain and
- coordination required to mobilize adequate quantities of quality coffee into the market.

In view of this last problem, support is being given to aggressive, investor/entrepreneurs who will assume the responsibility and much of the risk to amass and process commercial quantities of quality coffee. Of the two models underway one involves the entrepreneur as a buyer of coffee cherries for his own enterprise and the other is where the entrepreneur allies himself with cooperatives of micro-producers, assuming a management role. **I agree with the use of entrepreneur leaders to develop the industry**, and experience will indicate if they will succeed in a way that improves the micro-growers income.

I. INTRODUCTION

1.1 PREVIOUS EVALUATIONS

In the past two years there has been a serious effort to identify Rwanda's potential for entering into the principal *quality* coffee markets and strategies to achieve that potential. Three recent reports on the subject are:

- "Evaluation, Results and Marketing Strategy of the Potential of Rwanda to Capture a Share of the American Specialty Coffee Market"; **Samuel G. Olivieri**; December 2001.
- "Development of Washed Processing within a Framework of Private Investment"; **J.E. Schluter and A. Finney**; June 2000.
- "A Plan to Unleash Rwanda's Potential in Coffee"; ***ontheFRONTIER***; April and May 2002.

a) The **Olivieri** paper takes a position that Rwanda must place priority on producing for the specialized, though very limited, shade-coffee market. However, without consensus as to what constitutes shade-coffee, it is an extremely unrealistic focus as the *centerpiece* of a coffee strategy, and especially since the shade-coffee market is less than .1% of the total coffee market. Conversely, a focus on **quality** will permit coffee grown under shade to be competitive in higher price markets, as well as be eligible for some of the esoteric shade-grown markets.

   Current shade-coffee certification criteria, specifically by the Rainforest Alliance, are often in conflict with production realities and there is a great difference between ***shade-grown as a market classification*** and the use of ***shade as a production technique***, especially in low-input systems. Producing coffee under shade offers several agronomic and economic advantages and I strongly believe that shade, as a component of production technology for ***low-input traditional systems***, is highly desirable, and perhaps even necessary for optimizing incomes. It is widely held that the use of moderate shade (25-35%, as conditions dictate) will be positively reflected in improved cup quality, lower per-unit production costs and higher yields than with a full sun system under traditional conditions and constraints.

b) The second two reports provide a very good overview of the Rwanda coffee industry and market prospects, respectively, and it is not necessary to repeat that overview here. These reports concur that Rwanda has natural conditions which favor high quality coffee production (principally altitude, climate and soils) and that developing a quality coffee component in Rwanda is a feasible avenue for increasing sector and export earnings. Empirically, cupping results have supported this opinion. All twelve samples submitted for evaluation in 2002 received a rating on the SCAA scale of over 70. One-half scored 77 to 79 and one-third over scored over 80, the minimum for a *specialty* classification. [One sample was evaluated by Green Mountain Coffee Roasters and eleven by Coffee Lab International.]

These results not withstanding, the reports also concur that the agronomic, financial and organizational factors currently existing in Rwanda are not consistent with a high quality, disciplined coffee industry, due to:

- highly fragmented coffee production units;
- low productivity;
- scarce financing;
- low technology for post harvest processing and handling;
- single price paid by middlemen and exporters;
- lack of market intelligence;
- lack of a national coffee strategy;
- weak farmer organization and leadership.

The premise of both reports is that producing quality is the logical underpinning of a revised national coffee program. I also believe is the correct approach, but am not as optimistic regarding expectations for the volume of high quality coffee that will be exportable, nor the time frame suggested by the studies; especially the ***ontheFRONTIER*** analysis and plan.

The **Schluter/Finney** report examined the structure of the current national industry and recommended changes necessary for Rwanda to compete in the *quality* market. They outlined a sector-wide pilot program, albeit more comprehensive and of greater scope than what I would envision as a conventional pilot program, that would address the difficulties of producing quality coffee. Particular emphasis was given to centralized wet processing as a critical control point for quality, especially in light of the distribution of production among over 400,000 micro producers.

The work presented by ***OnTheFrontier*** focused on:

- the world market for *commercial* and *specialty* coffee,
- the elements to be addressed to access those markets, and
- a plan to launch Rwanda into the *specialty* markets.

It provides a methodological framework to analyze the market, evaluate Rwanda's coffee sector and develop a ten-year plan for sector development. The data and information regarding trends and opportunities in the quality markets are also very useful for shorter run recommendations and I have used them for my report.

In spite of the very high quality of both reports, I feel that they are overly ambitious given the present status of the coffee industry *vis a vis* quality market standards and requirements. My observations, conclusions and recommendations that follow in this report, while not necessarily in conflict with those of their reports, will suggest more modest actions and targets, particularly for short-run activities.

1.2 CONSIDERATIONS FOR ENTERING MARKETS FOR QUALITY COFFEE

The information from the survey conducted by ***ontheFRONTIER*** is very similar to that of other surveys and provides valuable indicators for developing an entry strategy into quality markets. The survey and accompanying analysis:

- characterize the *quality* coffee markets,
- examine both the *commercial* and *specialty* markets, and
- differentiate between *premium* and *specialty* coffees.

I am in agreement with ***OnTheFRONTIER*** and the several others who have contrasted *quality*- versus *commercial*-coffees and have differentiated within the *quality* coffees themselves using the terms *premium* and *specialty* to address the range of coffees within the *quality* classification. The study illustrates the significant price differences between the commercial and *quality* markets and among *quality* coffees, by contrasting 2001 per-pound retail prices:

- Commercial low quality [Folgers] $ 2.89
- Supermarket Premium [Maxwell House Colombian Supreme] $ 4.32
- African Blend [Principally Kenyans] $ 9.00
- Puerto Rican Yauco Selecto $ 19.75
- Jamaican Blue Mountain $ 34.95

The Maxwell House Colombian coffee is somewhere near the low end of my idea of *premium* coffees. A target price range for good quality washed Rwandan *premium* coffee could be expected to be somewhere between $6.00 and $8.00 per pound and for its *specialty* coffees to eventually reach, and surpass, that of the African Blends. **Any** of these prices represents a considerable improvement over the heavily discounted prices now received.

Identifying where exactly the *premium* market ends and *specialty* begins is not as clear as perhaps is implied by the ***ontheFRONTIER*** study. I believe that there is a fairly broad area of overlap between the opportunities for marketing *premium* and *specialty* coffees and would, therefore, expand the market options to reflect the imprecise difference between the two and the range of quality carried by coffee marketers. The following examples are illustrative intended to show the diversity of the market and the range of product demanded by any one buyer. [Note: With the exception of Neumann, all the companies mentioned are North American. This reflects my ignorance of the European market, not the lack of opportunity there for Rwandan coffee.]

- *Premium* Coffee
  - ⇒ Large specialty roaster (e.g. Millstone [P&G])
  - ⇒ Integrated large specialty roasters (e.g. Starbucks, Peets, Second Cup)
  - ⇒ House Brand roasters (e.g. JBR for Safeway Supermarkets)

- *Specialty* Coffee
  - ⇒ Specialty traders and importers (e.g. Royal Coffee, Neumann, Holland Coffee, CBI)
  - ⇒ Small and medium specialty roasters (e.g. Community Coffee, JBR Coffee)
  - ⇒ Integrated large specialty roasters (e.g. Starbucks, Second Cup)

The differentiation between *premium* and *specialty* coffee is crucial to designing a coffee strategy. Notwithstanding SCAA's attempts to quantitatively define *specialty* coffee, there is no consumer-driven distinction between where one ends and the other begins. However, there is an identifiable continuum of quality coffees that are easily contrasted with the bulk of commercial coffee. This is important in estimating the **total volume** of the *quality* market and understanding its cup requirements. The *specialty* coffee market constitutes less than 10% of green coffee volume in the major consuming countries, yet, ***quality*** coffee volumes are between 25 and 30%. Additionally, the standards for qualifying for the *premium* segment of the quality market are considerably less rigorous; a critical consideration for most producing countries.

There are obvious advantages to producing for both the *premium* and *specialty* markets, notably higher prices, fewer entrants against whom to compete and their rapid growth during the past ten to fifteen years, at the expense of conventional commercial coffees. There are, however, some negative aspects that must be faced by aspiring suppliers, including exacting quality requirements and controls, reduced volume of total demand and fewer channels for accessing the markets.

II. OBSERVATIONS REGARDING THE CURRENT RWANDAN COFFEE SECTOR

My observations of the functioning of the coffee sector were guided by the proposed Scope of Work (SOW) and the time allocated. Scant time was available to cover players outside of ADAR's clients and the institutions with which it is working. In hindsight, probably the one other visit that would have been worthwhile would have been to one of the major exporters. That said, however, I believe that the information received from interviews and reports provided sufficient information on the current export system to conclude that it is neither complicated, nor ambitious and is trading is focused on volume, not quality.

2.1 IMPRESSIONS REGARDING COFFEE PRODUCTION

While it was not part of my SOW, and certainly far from any field of expertise I may have, it could be helpful to mention a few of my observations regarding production because of its direct and significant influence on final quality.

It has been amply demonstrated in leading producing countries that to achieve cup quality the concept of *total quality* must be the guiding principal of the industry. That is, quality must be preserved in all phases of the production-marketing chain. Though this is intuitively obvious, it is not evident in practice in Rwanda, or in all fairness, most other producing countries. Based on roadside observations and discussions with ADAR clients and advisors (particularly Alan Finney and John Schluter) it is obvious that the production phase of Rwandan coffee is not oriented toward optimizing incomes, nor maximizing quality.

The first and most dramatic impression of the production sector is the vast number of *micro* units responsible for a total national output that hardly qualifies Rwanda as a significant coffee-producing country. The logistics of producing quality coffee under these circumstances are considerably more difficult than in areas of Latin America, where small production units are measured in hectares, not trees. The cupping reports referred to earlier substantiate that high quality coffee is possible in Rwanda, even under the fractionated production system in which mini-producers abound. To achieve that quality in commercial quantities and on a consistent basis, it will be necessary to induce growers to improve their

production and harvest operation. In large part, this will depend on a farm-gate price differential for good coffee, cherry or parchment that is perceived to compensate for added costs and effort. That some of Enock Kabera's neighbors are already planting new areas with improved varieties, and possibly using higher than normal input levels, may be an indicator that they foresee his washing station as a stable, profitable market. That is the way Kabera interprets it and is relying on their increased output to complement his own production in order to make his washing station efficient and competitive.

Another change from the traditional system was also evident. Consistently ripe cherry is being brought to the Maraba Washing Station [or Wet Mill] , which indicates that harvesting discipline can be developed and enforced, even when there are hundreds of producers involved. But, the selective picking that characterizes the Maraba suppliers is far from the norm. Quality problems and farmer attitudes observed at the COOPAC "washing station" showed that delivering only ripe cherry is not an engrained tradition of the cooperative members, in spite of the cooperative paying twice the parchment-equivalent market price.

Perhaps two other questions that merit mention, especially as they are both within the small producer's financial capacity to adopt, are those of shade and variety. Based on experiences in Central America, it is highly unusual for a traditional small grower not to have shade. It is widely agreed, and corroborated by research, that shading coffee will allow the small producer to reduce production risk and per-unit costs. This applies particularly to his traditional system which uses little or no chemical fertilizer or phytosanitary controls, as is the case in Rwanda. Whether or not this practice should be applied to the "larger" growers, who have resources to invest in acceptable levels of inputs, is beyond my experience to recommend, but it is the system of choice on almost all the plantations in Central America, including those reaching 1,000s of hectares. In selecting the source of shade, I commented on the use of banana, which would serve the dual purpose of providing shade and producing a cash crop, very possibly more valuable than the coffee. This practice was developed and adopted in Central America by the small growers themselves. The idea was considered to have potential by Alan Finney, though he probably has limited experience with micro production units, as well as with shaded coffee.

Finally, there is the question of varieties appropriate for the small and medium producer in Rwanda looking to enter *quality* markets. Again, evidence from Central America indicates that improved varieties derived from Bourbon lines, e.g. Caturra and Catuai, are equally capable of producing coffees of the highest cup quality. In addition, the newer varieties offer ease in harvest, greater resistance to disease and the potential for higher yields. With the exception of a **very few** persons associated with the specialty

movement in the USA who sing the praises of the heirloom varieties, I have encountered no grower, processor or buyer who consistently favors those varieties over their newer relatives. The results of the *Cup of Excellence* competitions in Brazil, Guatemala, Nicaragua, as well as Panama's independent national competition and auction, document that the quality of the newer varieties has equal market acceptance as of the traditional ones. Similarly, of the cupping results from the samples sent to Coffee Lab International, Caturra had both the highest (88 points of a maximum 100) and the lowest (73 points) scores, and the classic bourbon (BM) also scored very well (77-84 points).

Again, I emphasize that my capacity to talk of production practices and technologies comes entirely from my capacity to listen to experts in the field. However, I believe that most of what I have commented on is not particularly controversial or earth shaking. Of course, the final word, or any other word on the subject should come from production specialists.

2.2 CAPABILITIES OF COFFEE WASHING STATIONS [SOW TASK NO. 1]

The only washing stations in operation that I observed were the Masaka (marginally so) and Maraba stations. Though neither station is a primary participant in the ADAR project, they are generally similar to those projected for ADAR's clients, all of which are currently in the planning, design or construction stage.

2.2.1. Contrasting East African and Central American Coffee Washing Systems (Wet Milling)

The major differences between the wet milling process as seen in Rwanda and as practiced in Central America are with respect to fermentation and drying.

a. Fermentation

The three-stage/three-tank fermentation process in Rwanda contrasts to the one-stage/one-tank method in Central America. I cannot critically comment on the current system used in Rwanda, and soon to be incorporated in all of the ADAR-sponsored washing stations, because it is the first time I have seen it and it apparently produces excellent quality coffees in Kenya and elsewhere. I have seen in Central America,

on two or three occasions only, the practice of soaking washed coffee for twelve to fifteen hours in order to achieve a fuller, darker blue-green color.

In questioning the ADAR clients as to the reasons for the three-step process, none could explain the rationale for steps two and three. This was not surprising in that none has had experience with coffee wet processing and all are following the recipe provided by their technical advisors. I further discussed the topic with Alan Finney, who also is a proponent of the triple-tank system. At the end of the day, and in view of the excellent coffees produced in Central America, it seemed to me that Alan was open to the possibility of obtaining top quality with the one-step system. This opened the door to my suggestion in Section 3.4, below, that ADAR look at quality differences obtained using the two systems. Principal concern to be considered is the additional investment cost of tripling the number of tanks needed to support the East African system and the extra time taken by the washing process.

b. Drying

Most sun-dried coffee in Central America is dried on patios, though the major "innovation" in the last several years has been to substitute plastic sheets for cement or brick patios for drying after the first day. The primary reason for this change is the much lower investment cost. Screen drying as practiced in East Africa, however, possibly offers some advantages over that system, especially for producing quality coffees. In fact, a number of Central American producers have adopted the drying screen technique. Alan Finney is a believer in the screen system and I cannot but agree with him, based on the quality of the coffee produced in the area. I see no reason to change the practice of screen drying, except where investment and maintenance costs are factors and using plastic sheets would provide a more affordable alternative

Another system found increasingly in Central America uses mechanical dryers. These are especially indicated for handling large volumes of coffee and to combat the vagaries of weather. The first is not an issue for a Rwandan quality coffee industry and, while the second is indeed a constant threat, the cost, operation and quality control questions associated with mechanical drying all but eliminate it from consideration.

2.2.2 ADAR's Clients Washing Stations: Comments and Recommendations Based on Observations and Discussions

The degree of advance of the washing stations varies greatly among ADAR's clients, ranging from the planning stage to the final receipt and installation of machinery. To my best understanding from visits and interviews the following is the current situation of each client:

Client/Representative	Location	Development Stage	Ownership
1. Enock Kabera	Rwanatamu	Machinery Installation	Single Owner
2. Alfred Nkubili	Mpanga	Design	Single Owner
3. Kabera, Nkubili & Nkusi	Kigali	Earth moving	Consortium(3 Owners)
4. Juvénal Nkusi	SE of Kigali	Design	Single Owner
5. Emmanuel Nzungize	Gisenyi	Design	Cooperative (COOPAC)
6. Ndoba Mugunga	Mwito	Construction	Single Owner
7. Cécile Kagoyire	Gitarama	Planning	Cooperative (UCAR)

Because these washing stations were not operational, the following comments and recommendations are based primarily on conversations with clients and advisors, reinforced by observations of Enock Kabera's installation.

Enterprise Ownership and Management

One of the critical questions regarding the potential for producing quality coffee is the organizational structure and management of the enterprises. This is a determining factor in any business, but more so with a great number of potential participants.

My initial understanding, before arriving in Rwanda, was that the washing stations would be property of producer organizations. ***Fortunately, individual ownership is the norm, especially in view of the large number and small size of growers, the weakness of producer organizations (when they exist) and the inexperience with quality coffee.***

In the two cases where the station will "belong" to a cooperative, there is an entrepreneurial individual or small group that will provide direction and management to the business. It appears that this form of

organization was chosen for financial reasons, not necessarily because of a strong collective motivation. In each case, ACDI/VOCA is financing the washing station and would do so only through a cooperative structure.

Nevertheless, **there is little doubt that the entrepreneurial members must closely control the operation of the enterprise**.

I believe that experience gained in ownership and management of these initial mills will be very valuable for charting the course for expanding quality coffee production and export. The organization and logistics for transforming the output of hundreds of mini-producers will be much more challenging than managing the physical flow of coffee once it has reached the washing station.

Washing Station Management

None of ADAR's clients has experience in either operating a washing station or in producing and marketing coffee for the *quality* market. Fortunately, operating a washing station can be learned rather quickly and the process is fairly forgiving when critical control points are established and observed. The consensus among the clients is that for the first year, at a minimum, it would **be a best solution if experienced mill managers were brought from outside Rwanda**; again, the consensus favors their coming from Kenya. Alan Finney endorses this course of action and recommends that the managers are drawn from individual estates, rather than cooperatives. Though coming at a higher cost, he firmly believes that estate managers will be more disciplined and orientated toward quality.

I completely agree with his you-get-what-you-pay-for approach. When you consider that the annual sales value of the coffee flowing through each mill will be over $250,000, just to save $2,000 in salary during the harvest season, while putting your quality in jeopardy makes little sense.

Mill Capacity and Source of Cherry

The planned capacity of each washing station is about 250-300 tons of green coffee. To produce that volume the mill will have to process approximately 1,500 to 1,800 tons of cherry. In the case of the single-owner washing stations, the owners are projecting to produce between 40 and 60% of the cherries required. If we use the more conservative volume of 1,500 tons and 50% to be produced by owner, this will leave 625 tons of cherry to be purchased from neighboring growers. Based on averages from 1999

agricultural data, it would require production of approximately 2,200 small producers to provide that amount of cherry.

Currently, in dealing with lesser volumes, the Maraba station does not collect product; rather each producer brings it in. However, I believe that as volumes and the number of suppliers increase, serious consideration will have to be given to questions of logistics, as well as quality control. It is important that the questions of transport cost and quality of cherry brought to operating stations be monitored this coming harvest season. If these prove to be difficult to manage, it will be necessary to design alternative systems of cherry delivery, for example to establish buying stations where growers deliver and are paid, or perhaps reduce the capacity of mills to process supply from a more immediate area.

Design, Process and Initial Investment Cost

For entry into the specialty market centralized washing stations bring several advantages over the system of individual, on-farm processing. Among these advantages are greater quality control, uniformity of product, economies of scale and threshold volumes to offer to buyers. However, if the cost of entry into this activity, as determined by investment costs, is so high as to exclude all but the most wealthy entrepreneurs and investors, little is accomplished with regard to opening the field of opportunity to small producer organizations.

The estimated $200,000 investment for a 250- to 300-ton washing station is very high compared to costs in Central America, where the cost would range from $60,000 to $80,000. Apart from costs of materials and transport of machinery, two probable reasons for explaining part of the difference are:

- The three-tank fermentation process
- Screen drying.

It would be of value to calculate the additional cost associated with decision to stay with the current processing system and balance it against any difference in the quality of coffee. While I do not feel that it is within my scope, nor is it my intention to advocate changing the fermentation system currently used, I would like to have been able to say that there were compelling reasons given for the three-tier process. Thus, if it proves to add considerable expense to the washing process, the benefits should be examined.

Regarding screen drying, I believe it is a good system and probably the most effective in Rwanda, where harvesting and processing take place during the rainy season. Alan Finney is trying to introduce ideas that would make the screens longer lasting and thereby reducing per unit costs over the long run.

Another area under discussion that could imply an increase investment costs is the use of modular processing units, such as those offered by Pinhalense (Brazil) and Penagos (Colombia). On the surface, this equipment would be most recommended for small operations, e.g. 50 to 80 tons/year, because of its one-stop shopping benefit. However, reliance on a modular unit for processing is risky if there is no ready availability of technical backstopping and spare parts. In that it's an all-in-one system, if one part is not working correctly, the whole operation is paralyzed. In Central America, with larger capacity mills, the cost of buying these units is considerably higher than installing equipment purchased individually. However, if the supply and servicing questions are resolved, these units could provide an attractive alternative to the construction of areas and facilities for receiving, depulping and classifying coffee.

Size of Fermentation Tanks

In the face of uncertainty regarding the supply of cherry to the washing stations, especially in the first year of operation and until the owners' production stabilizes at projected levels, it would be prudent to design fermentation tanks smaller rather than bigger to give more flexibility for variable volume of delivery. In observing the Maraba operation, small quantity of cherry that was received was too little to fill the fermentation tank with a critical mass of coffee would help in raise temperatures during the process. While possibly this will not affect the quality of the coffee produced, it will likely increase fermentation time.

Quality Control

There are a few critical control points and operations during wet milling and drying that will determine the final quality of dry parchment coffee. If these are attended to, each lot of coffee will be of the highest quality.

Cherry

In observing cherry receiving in Maraba, it appears that most will come in small batches, making it easy to visually inspect each grower's lot. ***Only cherries that are ripe and delivered on the same day as***

picked should be accepted. (Although theory says that cherry can be processed within 24 hours of harvesting, in reality, requiring same-day delivery makes it easier to create delivery criteria and discipline.) Mixing green, over-ripe and dried cherries with ripe cherries will destroy quality. If the mill were to accept second grade cherries it must completely separate them from first-quality cherries and negotiate them, pay discounted prices and process them separately.

The quality of the cherry is not always evident from outward appearance. Once the cherries have begun the wet milling process, a second form of selection must be present to eliminate damaged ones which passed visual inspection. This is usually done by floating them out, either as the first step before depulping or after, either by mechanical means or flotation.

1) Depulping

Depulping equipment will do its job correctly if it is well maintained and calibrated. If not, the telltale signs are:

* pulp mixed with the coffee beans that continues in the process, which will decrease quality during the fermentation process
* coffee beans mixed with pulp and subsequently discarded is coffee that never reaches the market
* coffee beans that are nicked or crushed are defects that decrease the classification and value of the coffee

Both the coffee beans and the pulp must be continually checked. If any of these problems are observed, they must be corrected immediately.

2) Fermentation

Simply, coffee must be washed when fermentation is completed, neither before nor after. If fermentation is not complete it will continue during the drying process and impart the characteristic winey taste, or worse, to the coffee. If the coffee is not washed when fermentation is completed it will acquire an over-fermented taste that is fatal for quality coffee. Several factors affect fermentation time. Temperature is a key factor, which is why I mentioned that tanks size must correspond to coffee volumes. A thin layer of

coffee that cannot develop and maintain temperature will take much longer to ferment than a compact mass.

3) Washing

The washing process involves three steps:

- initial washing while transferring the fermented coffee from the tank to the classification canal,
- agitating the coffee in the canal to loosen residues and "dirty" water adhering to the beans
- moving the coffee out of the canal to be drained and dried.

The first step will rinse and/or float away most of the water and solids remaining from fermentation, the second will separate the coffee bean from residual contamination and the third will complete the process. The keys to adequate washing are complete fermentation and clean water for the first and final steps. Water use under the East African three-tank system does include an extra step of soaking and significant additional quantities of water. ***Regardless of the system used, recycling the relatively clean water from the final rinse will decrease the total consumption of water and corresponding disposal concerns.***

4) Drying

The question of drying has already been touched upon, and as indicated screen drying gives excellent results and is being adopted by quality producers in Central America. Regardless of the sun-dried system to be used, the most important aspect is frequent and complete movement the coffee beans. This will eliminate a concentration of wet, warm beans, the ideal medium for fungus growth, and will guarantee uniform drying of the entire lot.

For new entrants into the quality market, e.g. ADAR's clients, moisture level is an important control point, regardless of drying system used. Underdrying will cause the moisture percentage to be above the recommended maximum of 11-12% which will be a negative condition when evaluated by buyers. Overdrying will possibly cause damage to bean quality if it approaches 8% and will definitely lower the weight of the coffee and the subsequent income generated.

There are battery-powered moisture meters that are reasonably priced (around $500) and easily operated. This would be a highly recommended tool for the washing station of the volume contemplated by ADAR clients.

Cleanliness

After every day's operation the washing station must be thoroughly cleaned. Of particular importance are the machinery and the fermentation tanks. Coffee beans, pulp and dirty water present in the washing system will very probably cause a loss in quality of subsequent days' coffee. Washing with clean water is requisite and the mill supervisor must make a daily visual inspection. Inspection of the hand depulpers that were in service in the current operations of ADAR clients reveled that complete cleaning is not a routine procedure.

Cupping

The only sure method for measuring quality is cupping. I highly recommend that each lot from the washing station (i.e. each day's production) is cupped for defects before mixing lots. This does not have to be done each day, especially if the cupping is not done at the wet mill, for example by OCIR Café. Cupping at this level is primarily for detecting major defects due to processing errors. ***The double benefit that this cupping will provide is that it will prevent mixing good coffee with bad and it will help identify the specific steps in wet processing where quality is being lost and must be corrected.***

Examples of common defects and likely origins:
Mold and mustiness will most probably be due to:

- cherry coffee that is not processed on the same day it is picked, whether because it was not detected when delivered to the mill or allowed to stand considerable time before depulping
- failure to sufficiently or frequently move the coffee on the drying screens
- bagging and storing humid coffee
- inadequate cleaning of depulping equipment.

Fermented taste:

- old cherries that have already begun to ferment in their skins (probably two or three days old or older) that were not detected when delivered or were not depulped on the day received
- over fermentation in fermenting tank;
- failure to adequately clean machinery and/or fermentation tanks.
- Green bean taste: High presence of green or immature cherry.

Water:

There are three important aspects regarding the supply of water to the washing station:

- quality
- quantity
- cost

Water quality is a *sine qua non* for quality coffee processing and any contaminant that will impart taste or odor to the coffee is cause for disqualifying of the source, or necessitates somehow cleaning the water. Since that would probably be expensive and perhaps without guarantee of rendering the water acceptable for processing use, seeking an alternative source would be the recommended action.

The second two aspects lead to similar decision making; that is, "How much water to use?". The two water sources observed were (1) the use of town water (Enock Kabera) and (2) bringing it from a relatively far distance (Alfred Nkubili). As a replicable element in future washing stations the former may well depend on the political/economic power to access village water at a reasonable cost, whereas the latter is basically a function of cost. Experience in Central America shows that using village water is usually expensive and often leads to difficulties with domestic users, especially if supplies are limited. On the other hand, bringing water from a considerable distance (up to 3 to 4 kilometers) using plastic pipe is not particularly expensive, as Alfred Nkubili has already done.

If, in fact, cost or availability limits the quantity of water for use at the washing station, water-saving practices must be employed. As mentioned earlier, clean water is essential in the final wash. Most other operations can be accomplished with a fraction of the clean water used in traditional systems. Gravity or

recycled water can be used to deliver cherry to modern depulpers, which function very well with little water.

Transporting depulped coffee beans to fermentation tanks can be done safely with recycled water. Similarly, water recovered from soaking can be recycled to move fermented coffee from the first tank to the second fermentation tank, or to the classifying canal in the case of the Central American system, without adversely affect coffee quality.

I did not get the impression that it is planned to recycle water in the washing stations of ADAR's current clients; however, I was subsequently told by ADAR staff that it is, indeed, part of the design. Certainly, recycling should be carefully considered as a technology in the development of a washing station program. As indicated by Schluter and Finney, recycling can reduce water needs by up to 75%. Recycling water only requires a pump, some additional PVC pipe, a tank in which recycled water is collected and, obviously, a source of electric power, implying recurrent, though minimal, energy costs. The additional investment required would probably be no greater than $1,000 to 1,500. Other advantages of recycling water would be a probable decrease in fermentation time, owing to the high concentration of sugars in recycled water and a lesser volume of effluent water to manage at the end of processing.

Waste Product Disposal:

The two principal waste products from the wet milling process are pulp and effluent water. Adequate pulp management is relatively simple and economically practical if the final product is returned to the plantation. To minimize carting costs, it can be piled near the depulping area and allowed to compost and dry, probably requiring about three months during the dry season. In the case of Rwanda, where processing takes place during the rainy season, care should be taken that rainwater does not wash pulp or associated effluent into streams or lakes.

A potentially more difficult problem may be the disposal of effluent, increasingly so if water use is not restricted or water is not recycled. Acceptable disposal of effluent is either by collecting it in a pit dug in the ground or spreading it over a considerable, gently sloping ground surface. In the former the effluent water filters into the ground. Depending on soil characteristics and the proximity of surface or ground water this system may be a potential source of contamination. Though the second system requires a much greater surface area over which to spread the effluent, it greatly reduces the threat of contamination. Basically, this wastewater is primarily disposed of through evaporation.

III. DISCUSSION AND RECOMMENDATIONS

In order to cover the areas requested in the SOW in a logical, non-repetitive fashion I have taken the liberty of consolidating and/or rephrasing the tasks indicated in Section III of the SOW, "Specific Tasks to be Performed". The following topics resulted from this process, not including Task No. 1 discussed in Paragraph 2.2, above:

- Instilling and Reinforcing the Concept of Quality Among ADAR Clients [SOW Task No. 2]
- The Flow of Specialty Coffee from Production to Market [SOW Task No. 4]
- Market Orientation and Management of the Flow of Coffee from Farm to Washing Station: Problems Associated with Large Numbers of Very Small Producers [SOW Task No. 5]
- Approaches and Activities of ADAR to Positively Affect the Commercial Performance of Its Targeted Investors/Operators [SOW Task No. 3]
    - Buyer List and Description for Marketing Future Coffee [SOW Task No. 6]

3.1 Instilling or Reinforcing the Concept of Quality Among ADAR Clients [SOW Task No. 2]

This Task was covered in the field during visits to clients' installations and in discussions with them. By in large, the message covered the same topics presented in Section II, above, and it was repeated to each client, hopefully in a context appropriate to the advance of his planning, construction and ideas regarding producing quality coffee. The focus of the exchanges with the clients was as much on understanding quality as achieving it, principally in terms of the USA market.

Quality obtained from wet processing is largely a result of the factors indicated in 2f, above. These were discussed with the clients and it was emphasized that the control system to monitor coffee at critical points in the process must be implemented continuously. Successful, or unsuccessful, processing and monitoring will be reflected in cupping evaluations of each lot. Ideally, each washing station would have the capacity to evaluate its coffee to detect processing defects. If this is not feasible in the short run, at a minimum each lot of coffee should be cupped at OCIR Café.

As an introductory step into the world of quality, each client should be given a short cupping session in OCIR Café to give him a feel for good and bad coffee and to make him feel involved in the process. This

session could be one of only a few hours, where the client is exposed to clean-cup coffees and those with common, serious defects. Currently all ADAR clients are uninformed and inexperienced in producing quality coffee. This is reflected in their lack of criteria for evaluating, accepting or rejecting consultants' recommendations. Also, I have a clear impression that they have little concept regarding entering and staying in the major quality markets. Again, each of the clients seems as content to allow ADAR to gain market access for him as he is for consultants to plan his production and processing systems. An important part of ADAR's program should be oriented toward developing the capacity for Rwandan coffee entrepreneurs to knowledgeably participate in the program, to the point where they use consultants as consultants, not decision-makers.

3.2 THE FLOW OF QUALITY COFFEE FROM FIELD TO MARKET [SOW TASK NO. 4]

I doubt that a pictorial flow chart tracing the movement of coffee from plantation to market would add to the information presented below. The commercial chain for coffee is basically the same as for other agricultural export products which undergo transformation from the product harvested (e.g. cherry) to that which is sold (e.g. green coffee). The flow of coffee to quality market, as envisioned by ADAR and its clients, will be straightforward and involve fewer participants than the current volume-oriented market. The important questions that will arise not with respect to the physical flow of product, but rather, concerning the ownership and control of the coffee, and its consequent effect on quality.

3.2.1 Coffee Ownership

It is projected that Rwanda will export approximately 20,000 metric tons of coffee in the 2002/2003 season. This will be produced by about 400,000 growers; that is, **about 0.05 tons per grower!** More than anything, this will complicate producing and marketing quality coffee. To reach output goals, ADAR's clients will depend to a greater or lesser extent on these small growers. They have approached solving the question of supply somewhat differently, however, one common feature is that the ***responsibility for coffee quality is NOT left to the small producer***. The three ADAR single-investor clients are owners of their washing stations.

They plan to have plantations that range from 50 to 80 hectares and they will complement cherry produced on those plantations with that bought from neighboring small producers. The success in obtaining the

cherry they need will depend on the price they offer and the acceptability of the product delivered by the small grower

For ADAR's two clients who have elected the "cooperative" route, the eventual structure of the processing enterprise and ownership of the coffee that reaches the market is less clear. Emmanuel Nzungize is the Chairman of COOPAC and will provide the entrepreneurial drive to the cooperative to process and market the cooperative members' coffee. Recognizing the indispensable role of the entrepreneur to **organize and lead** the great number of small producers involved in the enterprise presents the question as to how he should be compensated. I don't know that there is one answer and maybe this has to be determined on a case by case basis. Possible methods would be to:

- pay a salary [probably not too atractive to a business man];
- give him a commision/percentage on the sales of cooperative coffee;
- let him buy the product from the cooperative at a fair price, which could be adjusted for the final price he receives.

In the case of Nzungize, I think he is thinking of bringing cherry from Congo and maybe a deal could be worked out with the cooperative so that this Congo cherry (or other) could be processed a at reduced rate, for free, or whatever.

For the "cooperative-based" activity being organized by Cécilia Kagoyire and friends, the group plans to plant a total of 70 to100 hectares of coffee, which would provide the core of cherry to the washing station. Cooperative members would provide the remainder of cherry to be processed. I somehow feel that the final result may well be that the Kagoyire group would end up as the owners of the parchment by the time it goes to the dry mill. However, the ownership of the coffee may remain with the cooperative until sold or exported. If this were to be the case, it would provide an attractive alternative to personal ownership, even if a "return to management" scheme were necessary to compensate Kagoyire and/or the group for services.

Finally, at the non-ADAR affiliated washing station in Maraba, in anticipation of the end of the project, albeit still in the future, PEARL is rightfully wrestling with formulating an exit plan to transfer ownership and management of the facility. There is real concern about being able to identify a local organization (of producers?) that would be able to successfully take over the infrastructure and continue in the markets that

the project expects to have developed. Currently, in this management void, the project director functions in much the same role as the ADAR clients.

The ownership and control of the coffee passing through the production-marketing chain will have a great affect on its quality and effective entry into markets. **A modest washing station with a 125-ton capacity would require coordinating the delivery and processing of production coming from over 2,000 small growers!** In the apparent absence of producer organizations capable of managing supplying and operating a processing facility and marketing members' coffee, the model that has emerged places that responsibility in the hands of individual entrepreneurs.

The simplest way to maintain the quality of this coffee is for the mill owner to purchase cherry coffee, exclude the producer from processing decisions and exercise absolute control over quality.

Thus, to develop a quality coffee industry, the challenge to donors and the government is to identify and support, if needed, those entrepreneurs and/or create competent producer organizations. Realistically, I believe that the answer lies more with the former.

3.2.2 Dry Milling

[Again, this is not really my area of competence; but, what follows is based on experience and contacts, and is certainly common knowledge in Central America.]

The question of dry milling to conserve quality, prepare it for market and offer the maximum benefit of the owner of the coffee will follow in the wake of the washing stations. There are three alternatives open to the owner of the coffee leaving the wet mill:

- sell it as dry parchment
- contract milling with an existing dry mill
- dry mill it himself.

There would little justification for selling in dry parchment if the owner is to maximize returns. The decision, then, would be between entrusting the coffee to a dry mill or going into the dry milling business.

Contract Dry Milling

Though there is variation among countries in Central American, there is generally a selection dry mills where quality processing can be contracted at reasonable prices and delivered to specifications. In Rwanda, I am not sure of the quality of the milling available, or the prices. In the current volume coffee market and classification system Rwanda's coffees are far from the specifications for quality markets, regardless how defined. Its highest category, *Supérieur*, allows up to 36 defects. Specialty grading for the European and American markets have tolerance levels of 0-3 and 0-8 defects, respectively. In any event, there are many considerations when contracting dry milling, among which are:

- Capabilities of the dry mill

  The dry mill contracted to process the clients coffee must be able to meet specifications established by the client and the buyer, while not damaging the coffee, thus reducing its total value. The Schluter and Finney report does not elaborate on the ability of the current exporters to prepare quality coffees, so perhaps that capacity exists. Certainly this must be determined before large volumes of coffee are entrusted to a mill.

- Scheduling

  In addition to processing coffee according to the client's specifications, the mill must be able to deliver or export it to conform to the buyer's calendar. The quality of service is as important as the quality of the product when trying to capture a place in a demanding market.

- Cost

  The cost of contracting milling must be reasonable and consistent with the services delivered. The cost of the more demanding preparations will obviously be higher, but they cannot be so high as to reduce the competitiveness of the product.

- Mischief: Especially switching or stealing product

  Given that the product delivered will be of higher quality and value than almost all of the other coffees entering the mill, there is **the danger that part of the client's coffee will be exchanged for the lesser value product**. To help protect against this, independent cupping results by both the dry miller and the client must be compared and differences reconciled, or have the same ***impartial, competent cupper*** evaluate the coffee and present the results to each party. For Rwanda, OCIR Café is probably

the only option; certainly for the client at this time. The quality of the parchment coffee entering the dry mill should be the same as that of the green coffee to be exported.

The most common forms of theft in the dry miller's bag of tricks are to only return the first quality green coffee to the client and/or claim **a higher than actual conversion rate of parchment to green export coffee**. Therefore, the understanding between the client and miller must specify that **ALL** coffee be returned to the client, bagged separately by classification. If the overall conversion rate of total green coffee to parchment seems unreasonable or the quantity of other than first quality coffee is unacceptably low the client must investigate.

Depending on the condition in which the coffee is delivered and the market preparation sought, this conversion will naturally vary. **Roughly**, the maximum conversion ratios of coffee that is well processed in the wet mill, from *parchment* to ***first*** *quality green*, should be around the following:

- Normal milling: 1.20 to 1 [120 lbs. parchment yields 100 lbs. green coffee]
- American quality preparation: 1.25 to 1 [125 lbs. yields 100 lbs.]
- European quality preparation: 1.30 to 1 [130 lbs. yields 100 lbs.]

These ratios reflect the increasingly strict demands that are inherent in the preparations. Coffee that does not classify as first quality for a preparation is not necessarily inferior coffee, only that it does not conform to the particular standards of the classification or specifications of the buyer. For example, bean size is a common reason to disqualify an otherwise **perfectly prepared coffee** and the "seconds" of that coffee may be comprised of high-quality, small coffee beans.

The best control as to what the conversion rate should be is for the owner to know his coffee! If he knows that he is delivering well-processed coffee and the conversion rates differ significantly from the above he must examine:

- the total green coffee weight (firsts, second, etc.) obtained
- the total weight of first quality coffee obtained
- the quality of the second, etc. quality coffees returned

The total weight should conform approximately to the "normal milling" conversion ratios and the "seconds" should be of a reasonable quality, based on the quality of the parchment and the rigor of the

preparation. When the client is dissatisfied with the dry milling results, he may want to process a small batch, e.g. 10 bags, at another mill and compare quality and conversion rates. As a quick indicator, he can do a very small sample, e.g. 10 lbs. at OCIR Café and look at the resulting ratios.

Do It Yourself Milling

A third option for the client is that he dry mills his own coffee. This implies potential benefits as well as dangers. This activity would constitute a new operation to be undertake, just when the client is expanding his plantation and getting into the wet mill business. The question of managerial technical capacity must be carefully considered. Certainly, if his management capacity is adequate, he will be able to exercise greater control over processing and product quality, and avoid the threats of mischief indicated above. He will be faced with economic questions regarding investment and operating costs, both of which will have a close relation to the scale of the mill. In addition to the milling itself, he will need to solve the question of storage of parchment waiting to be processed. In the particular case of the current ADAR clients, if this option were determined to the be the best (although perhaps not in the first year), they could combine to put up one dry mill facility, much as the three are doing for one of the washing stations.

3.2.3 Producing for Quality Markets

The following will assume that cherry coffee is well processed at the washing station and that the quality of dry milling is not a limiting factor for market entry. **Once again, the key to success in the quality markets is to know your coffee and know your target markets!** The coffee produced will determine the potential markets; you cannot deliver what you don't have. The quality market is a sophisticated and small market and it is very difficult to fool the buyers. You may be able to *cheat* them once, but you won't *fool* them and there probably won't be a chance to cheat them a second time. The market is looking for good coffee; offering it is the best chance for success.

Characterize the Coffee

The seller has to **honestly** determine the characteristics of his coffee. Though these will vary somewhat, especially since in the case of ADAR's clients bought coffee will comprise 40-50%, the basic nature of the coffee will be identifiable and the cup profile will be fairly constant.

Initially, this information will be obtained from the cuppers evaluating the coffee, i.e. OCIR Café and Coffee Lab International; however, the most important feedback will be from buyers. There will be some

flexibility in differentiating coffee by bean size, but the buyers will look for consistency of cup as a major criterion for continued purchase.

Identify Markets

Knowing the characteristics of the coffee will suggest specific markets. This is one of the things that was requested of Coffee Lab International (CBI), but not something that was received.

I feel that in a continued relationship with CBI, or similar service, those types of suggestions and recommendations could be forthcoming.
But, again, it will be buyers and brokers who will give the best indicators of market potential. Specific characteristics are quickly associated with certain quality markets, for example the North American market puts a higher premium on acidity than the European market, and visa versa for bean size. To the extent possible, differentiate product offerings according to the preferences and rewards in each market. Remember that the primary goal is to maximize total profit.

Quality, Volume and Consistency: the Haitian Bleu Experience

Approximately six years ago, with support from a USAID project, Haiti made a bid to enter into the specialty market. A marketing consultant was contracted and the initial plan was to introduce two to three containers, approximately 50 tons, growing to five to six containers in three years. The sales pitch was a combination of a promise of great coffee (it's almost next door to Jamaican blue) and a reality of great poverty among the growers (at the time, the poorest country in the Western Hemisphere). Four roasters and/or retailers accepted a five-year contractual commitment to buy the Haitian Bleu brand for $2.00 per pound, FOB. During that initial contract period, the C-price ranged between $0.45 and $0.90 per pound. It was only two years ago that the loyalty of these buyers was rewarded by an improvement in quality, consistency and reliability of delivery. It is that recent track record that has enabled the Haitian Bleu producer association to contract with additional buyers in Europe and Japan, paying similar prices for as yet to become a superior coffee.

Since the Haitian Bleu program began the changes in the quality market make it difficult to repeat that story. Poor quality no longer triumphs over an appeal of poverty. Buyers are entering into multi-year, high-price contracts on the basis of demonstrated quality, consistency and reliability. If only five of the

seven planned washing stations begin working this year, producing 150 tons each of quality coffee, not the 250 to 300 tons projected, 750 tons (45 containers) of Rwandan washed coffee will hit the market. This will be 15 times the initial volume of Haitian Bleu, arriving to a more competitive and exacting market.

Suggestions for initial foray into the quality markets:

- Differentiate between great and OK coffees
- Begin modestly and offer only perfect coffee to the specialty market.
- Use proven market channels and experienced marketers.
- Guarantee that all transactions are transparent and honest.
- Look for good priced fallback markets.

3.3 MARKET ORIENTATION AND MANAGEMENT OF THE FLOW OF COFFEE FROM FARM TO WASHING STATION: PROBLEMS ASSOCIATED WITH LARGE NUMBERS OF SMALL PRODUCERS [SOW TASK NO. 5]

While the immediate focus of the ADAR coffee component is getting Rwandan coffee firmly established in the quality coffee market, one cannot lose sight that these are USAID resources supporting the program. Therefore, the underling objective of the activity should be to increase the incomes of the small producers, which all Rwandan producer are. ADAR's clients are not members of the small producer group, although their plantation size would classify them as such in many countries, in that the are of the economic elite of Rwanda.

The implicit strategy is to gain access to the quality coffee market, obtain higher prices for coffee and, thus, increase incomes. This will satisfy USAID goals only if a part of those higher prices finds its way back to increase incomes of the participating growers.

There are two challenges in dealing with the large number of very small producers required to supply the washing stations.

- introducing a new system: selling quality cherry;
- delivery from field to washing station: a question of logistics and economics.

3.3.1 Small Producers Selling *Quality Cherry*

The operative words are **quality** and **cherry**; currently, neither is in the small producers' vocabulary.

Quality

Cherry quality was dealt with previously [Section 2.2.2 f. 1)] in the context of conserving quality at the washing station. In fact, this question must be considered at the level of the small producer, before the cherry reaches the wet mill. All growers who supply cherry must ***understand***, or at least ***accept***, the mill's quality standards for receiving cherries; the existing system requires neither. The responsibility for educating them regarding quality will fall primarily to the mill owners, but a more comprehensive program could be developed by OCIF Café (the most likely candidate), supported by the ADAR project. A possible ADAR role will be discussed in Section 3.4.

Cherry

The change from individual, on-farm to centralized wet milling means that the small grower must market his coffee in cherry, rather than wet or dry parchment. This is a significant change in that he will have to deal with transporting a greater weight and volume of coffee and will deliver it in a form where acceptable or unacceptable quality is clearly visible. All things being equal, none of these new parameters is particularly attractive.

The ultimate enticement for the grower to change his marketing system is to demonstrate that he earns more for doing less.

As previously indicated, the washing station could purchase all cherry, having the grower separate the first quality cherry from the rest. However, considering the purchase of only first quality, the wet mill must:

- set quality standards;
- enforce them with a strict "either good cherry or no cherry" purchase policy;
- accept ALL cherry that complies with standards;
- guarantee fair weight;
- offer an attractive and stable price;
- pay cash against delivery (unless another payment scheme is mutually acceptable).

Contrasting observations at the COOPAC and Maraba washing stations indicate that there is work to be done to implement the new market modality.
Many of the growers delivering cherry to the provisional COOPAC washing station had little concept as to harvesting for quality and some were unwilling to rectify a mixed batch by separating the good from the bad cherry at the site. In contrast, at Maraba all of the cherry observed was of excellent quality. Yet, both were paying double the going market price.

The key to the conversion to marketing in cherry is that the grower earn at least as much money (see next section), while he does less work. The expectation is that the final export price of quality washed coffee will be greatly superior to the current price, enabling the processor to pay more for good cherry. Additionally, if the producer delivers in cherry, he is relieved of the chore and cost of depulping, fermenting and drying his coffee.

3.3.2 Small Producers Delivering *Quality Cherry*

Of principal concern is the coordination and control of cherry coffee from numerous small suppliers. The ADAR clients have not had to deal with this aspect of mill operation, and while the experience in Maraba has been good, the volume of coffee has been very small. There has been no test of the logistics of providing the ten tons of cherry daily from neighboring growers to the wet mill. My impression is that the ADAR clients assume that each grower delivering his own coffee will provide adequate quality and distribution of volume.

However, each producer will only deliver roughly one-quarter of a ton during the whole harvest season. I believe that this very small quantity of cherry will force the grower to weigh the cost and effort in bringing **only today's *ripe* cherry** to the mill, especially when the distances and/or time are "great". If it is perceived that the effort is not worth it, he will either not deliver in cherry, be tempted not to harvest selectively or consolidate multiple days' harvests.

Observed deliveries to the Maraba station seemed to range between 20 to 50 pounds of cherry per individual. I have no idea from how far each carried his coffee, but I had the impression that the radius of supply is quite small. If on the average a grower's output were about 500 pounds of cherry during the season, he would probably have to make at least four or five trips to deliver quality cherry. If the coffee ripens over a longer period, more trips would be required. Both selective harvesting and more frequent deliveries represent additional cost for the grower. Obviously, if each grower produced more coffee, the economies of scale of harvest and transport would be more favorable.

It is incumbent upon the owner of the washing station to monitor for any difficulties in obtaining the

quantity and quality of cherry needed and, in the event either is unsatisfactory, to seek solutions to guarantee acceptable supplies. Among the actions that could be considered are the following:

- The washing station could support its out-growers in becoming more efficient, especially by helping and or encouraging them to increase production. **It would be a win-win situation if the mill's suppliers were coffee farmers, rather just farmers with coffee.** It seems that the some of the farmers neighboring Enoch Kabera's washing station have been encouraged by its presence and the expectation of a better and more stable market. They have reacted by planting more area in newer varieties of coffee.

- In cases where distance and/or travel time is a factor in limiting cherry delivery, collection or buying stations could be established to reduce the effort for the grower to deliver cherry.

- In cases where high transport cost is a limiting factor, encourage growers to consolidate product for delivery to the mill and help arrange satisfactory transport.

3.4 APPROACHES AND ACTIVITIES OF ADAR POSITIVELY AFFECT THE COMMERCIAL PERFORMANCE OF ITS TARGETED INVESTORS/OPERATORS [SOW TASK NO. 3]

At the end of the project ADAR would like to leave Rwandan coffee with a foot in the door of the quality market and the sector with the capacity to expand that position. The project is working to introduce a change in the focus of at least part of the coffee industry, initially through private entrepreneurs/investors. As touched upon a few times in this report, the jury is still out as to whether small producer organizations will also be able to independently produce and market quality coffee. ADAR can contribute to resolving that question by paying careful attention to the results of the three models underway and evaluating their implications for small-grower groups in the quality market.

ADAR is not, and should not, be in the activity of developing producer groups. Rather, it should continue to work closely with other organizations with that mandate. The good relationship that ADAR has with the PEARL project and ACDI/VOCA should provide valuable indicators for the future participation of the small grower. The most likely sources for viable groups with potential to enter into the quality coffee business are the NGOs and other organizations supporting and improving those groups. The best alliance would be in which those organizations developed the managerial skills of the groups and ADAR focused on the technical aspects.

However, first things first. Within the present ADAR framework, which includes entrepreneurs, elements of the public sector and, marginally, producer groups, its most important contribution would be toward establishing that Rwanda can compete in the quality coffee industry and supporting that effort through:

- technical assistance;
- education and training;
- technical support;
- logistical support.

There is obviously overlap among these interventions and as presented below I have tried to minimize touching on the same topic more than once. It is imperative to keep in mind that the support that ADAR gives to the following activities has a clear exit plan. **The activities must have a logical termination when the project ends or be integrated in a sustainable manner into the activities of OCIR Café, an NGO or assumed by the private sector.**

3.4.1 Technical Assistance

- Wet milling:

  None of ADAR's clients has direct experience managing and operating a washing station. Each has pretty much decided to contract an experienced manager, brought from outside Rwanda. Nevertheless, **for the first full season of operation I would highly recommend that ADAR contract a proven, top level advisor to monitor and advise on all stations.**

  The advisor's primary focus would be on the wet milling, though he should be experienced with all phases of processing, from field to dry parchment. In addition, he should be familiar with dry milling so as to be able to relate the two phases for the clients. The advisor probably would not have to be full time during the entire season, but would be required more intensively at the beginning, until the mills were operating satisfactorily. [This could be a person such as Alan Finney. While it does not necessarily have to be him, I don't have any suggestions as to others, especially since I don't know any in the area. Perhaps John Schluter could be consulted for candidates.]

- Dry milling:

  ADAR should contract for an evaluation of the existing capability for dry milling quality coffee. Depending on the findings and recommendations, a decision would be made to use those facilities, upgrade and use those facilities (with adequate monitoring in either case) or install new facilities. The evaluation would naturally look at installations as well as personnel.

- Cost calculations:

  With the incorporation of "modern, large-scale plantations" and centralized washing stations, accurate calculations of costs and returns of the entire industry should be made: production, wet milling, dry milling, logistics and management**. ADAR should support this study,** which should gather the data during the harvest and processing season.

- Strengthening OCIR Café:

  In addition to upgrading OCIR Café's laboratory capability and training in cup and management (discussed in the next section), John Schluter recommended **that a full-time cupping advisor/ practitioner be contracted, probably through ADAR, to work side by side with OCIR**

professionals during the next season. This advisor would train and monitor in technical (cupping) and administrative aspects so as to institutionalize the rigor of a credible, internationally recognized laboratory. Again, Mr. Schluter suggested that this person could be sought in Ethiopia because of that county's long experience with world class coffee and the cost would be considerably less than for equal expertise brought from elsewhere.

3.4.2 Education and Training

- Cupping and quality evaluation for primary cuppers:
  Even if the full time advisor were to be contracted, **ADAR should support additional cupping training would be important for the OCIR Café laboratory staff and for cuppers associated with laboratories associated with the washing stations** (if any are installed). Recognized cuppers from neighboring countries would bring different techniques and criteria, at a reasonable cost, and would also help to establish and/or re-enforce the camaraderie and interaction among professionals in the region.

- Quality for small producers:
  Based on the earlier rough estimate, the number of small producers delivering cherry to the washing stations will certainly surpass 5,000 and likely approach 8,000. None of this multitude will have the slightest concept of quality, not only of the cherry that they must deliver, but also of the quality of the final product. One strategy to educate the producers on quality is to have mobile units presenting a short quality workshop in the communities where growers are producing for the washing stations. The workshop includes a discussion of quality and its determinants and a cupping session demonstrating differences among good coffees and some of the common defects which disqualify coffees from the quality market. **The likely candidate to organize and run these workshops is OCIR Café, with support from ADAR.**

  The mobile cupping unit used in Nicaragua cost approximately $300 and used equipment available in the local market. Of the three major operations in preparing the coffee for cupping, two used the common hand grinder that is used to grind corn and roasting was done in a round-bottom metal pot, over a gas burner. The on-site preparation could be eliminated and the coffees to be cupped could be

prepared ahead of time, however, this would rule out being able to prepare and cup growers' coffees to illustrated their quality.

- Quality for Mill Operators and Workers:
  Workshops similar to that described above should be given to washing station personnel. The workshop should be more detailed, emphasizing the effect of each step of processing on final quality. The first part of the workshop would discuss each major process carried out at the mill, its function and its consequences in the quality of the final product. The second part would consist of coffee cupping, focusing on in-the-cup effects of poor processing and the particular defect caused by each. Again, **OCIR Café is the mostly candidate for this job, supported by ADAR and the wet mill and cupping advisors.**

3.4.3 Technical Support

- Evaluation of Rwandan Coffees and Definition of Cup Profiles:
  This activity was already begun with the samples sent to Coffee Lab International. It should be repeated with coffees from the upcoming harvest, but with coffees from exportable lots. Before commercial samples are sent to perspective buyers, dry parchment should first be evaluated by OCIR Café and then representative samples sent to a referee lab, e.g. Coffee Lab, Wilhem Boot, a European lab (perhaps suggested by Schluter). The process is fast and will guarantee that only top quality coffees are circulated in the market.

  It is critical that the samples sent to the referee labs, as well as to buyers, are representative of a lot (container load) of parchment coffee that has been set aside. Once the results of the cupping are received, that lot is the only one that can be shipped as corresponding to the sample. Coffee should always be cupped prior to shipping samples. Once OCIR Café's capability is on an international level, this cupping can be done in country.

- OCIR Café

Coffee laboratory

ADAR can make an important contribution in establishing competent national cupping lab. The logical place to do this is in OCIR Café. It seems that the lab there is already functioning well, but it would be advisable to have its capacity upgraded to accommodate demands that could be placed on it to conform to SCAA and/or SCAE criteria and to perform training activities alluded to in the previous section. This upgrade would include the following:

- Evaluation of physical capability of the lab and support the purchase and installation of equipment and furnishing needed for an adequate lab. The cupping/laboratory advisor would be valuable for this step, or in his absence an advisor brought in specifically for this task.
- The SCAA has a program to accredit cuppers. It is recommended that one or more of the OCIR Café cuppers receive this accreditation. I believe that this could be done in the workshops at the annual SCAA convention, but checking with the SCAA would indicate the necessary steps.

Quality coffee extension units

If OCIR Café and ADAR were to implement a program or education in quality coffee for the small grower, it would be necessary to three or four workshop field units. In order to save travel-related time and money the workshops could be located at ADAR clients' washing stations, in which groups of 10 to 15 producers would participate in each workshop. Initially, this activity could be programmed for a finite time period and corresponding cost, so as not to leave it partially finished at project's end or make it a burden on OCIR Café that may be outside of its resource capacity.

Each client would provide an estimate of the number of growers who would deliver product to the washing station and workshops would be scheduled to attend to them. If 50 growers a week would attend workshops at each site, the vast majority of them would receive this training in about one year.

- Applied research

  I am hesitant to use the word "research" because of the connotation with respect to time and rigor. However, I believe that the two areas suggested certainly do not imply the never-ending academic time frame that would make these activities impossible under the current conditions in Rwanda.

I also believe that "indicators" that would result from the activities would be very valuable as inputs into decision making at the levels required by Rwandan coffee culture.

The real question is how ADAR could do this within the time horizon of the project. The processing activity would not need more than two years of observation and comparison and the shade option would need perhaps only one year more. The most feasible possibility would be to team with an organization that has a greater guaranteed longevity than ADAR and establish an end for the activity within a time period compatible with the other organization.

Processing

One of the ideas discussed was a comparison of wet processing systems and technologies in terms of quality, cost and compatibility with different producer conditions. I think it would be a very good idea to pursue. Initially, this thought was couched in terms of ADAR assuming the management of a washing station and testing alternatives to the Kenyan/East African system now proposed for all the washing stations supported by the project. Two possible sites were identified, but one is no longer available and the other problematic because of ownership conflicts.

I haven't any clear suggestions as how or whereto do this, except to talk to the PEARL project, ACDI/VOCA or others and try to find a way. I doubt that the Maraba site is big enough to install other systems and hesitate to recommend that private sites be used, although this depends on the relationship with the owners.

Crop association and shade

The question of the small grower using shade in his production system merits looking into. Certainly in Central America it is the dominant system, especially among traditional and low-input producers. Shade programs for coffee are well known and nothing has to be invented, only experimented with. I would give special attention to the use of banana as a shade and income crop. Banana is a proven cash crop, with which all small growers are familiar and the rainfall regime is such that there should be little competition for ground moisture between the banana and coffee plants. It has been indicated that the coffee-banana association was the preferred production system for growers during the 1970s and 1980s, but abandoned in compliance with government orders. That being the case, its reintroduction could be relatively easy and there may, in fact, exist technical information useful in the process.

Given the scale of operation of the small producer, instituting a few trials would be easy and cheap. On a 20 x 20 meter plot, approximately 180 coffee trees and 40 banana plants could be planted and closely duplicate the size of the average small grower's "coffee plantation". I believe this could probably be done on the properties of the ADAR clients, who would be able to monitor the plots. It would be in the interest of the owners of the washing stations that their suppliers produce more and better cherry. Data collection from those plots could be done by the ADAR clients, OCIR Café cupping technicians at the sites, other OCIR Café personnel, etc.

3.4.4 Logistical Support

In spite of the cost, in large part occasioned by Rwanda's distance from the centers of coffee commerce, sponsoring attendance at events and interaction with counterparts in other coffee producing countries provides invaluable experience. Thus, ADAR should continue with supporting persons important to the fledgling quality coffee in attending conferences and participating in observational trips.

However, the selection of participants should strengthen the entire sector, not just those investors currently willing to take the risk in committing resources. Certainly, public and private institutional support agencies, especially OCIR Café and the ministry of agriculture, as well as the export sector are critical to the success of a quality coffee component.

ADAR should also work closely with organizations in a position to support small producers taking a direct role in producing and processing quality coffee, if possible. Again, fomenting small grower participation is the most difficult task that will be faced, and it should not be forced if their organizations are inadequate for the challenge. It may well be that the entrepreneur/investor is the best route for developing a sustainable quality coffee industry in Rwanda.

3.5 BUYER LIST AND DESCRIPTION FOR MARKETING FUTURE COFFEE [SOW TASK NO. 6]

First we must assume that some quantity of good coffee will be available for shipment in 2002/2003; and, of that I have little doubt, however not in the quantities that ADAR's clients are projecting. Once the lots have been identified, set aside and cupped in OCIR Café and a referee lab, I recommend that this first year's foray into the quality market be done through established, respected agents or brokers.

Render unto Caesar that which is Caesar's, and likewise to the market professionals. Introducing new coffees into the markets will be much easier if they carry the endorsement of a known supplier to those markets.

In that way, the potential buyer his guarantee that the coffee actually exists and is of the same quality and characteristics as the samples sent and will be delivered on time. The agent or broker assumes those responsibilities.

This does not mean that only one agent can be engaged; but, in this formative stage, the use of different agents should be transparent. The volume of the coffee to be offered, in my opinion, will not warrant numerous agents. For the European market, on the basis of experience to date and given my lack of better alternatives, I believe that using **Edm. Schluter and Co. (John Schluter)** to introduce the coffees into that market would be an excellent alternative. A U.S. company that is having success in introducing small grower coffees from Central America into Great Britain is **Cooperative Business International (CBI)**. But, I believe that they have a close working relationship with Schluter and it would be necessary to keep their participation in the open, so as not to cause problems down the road.

With respect to the U.S. market I would look to companies who give an opportunity to new and small producer coffees that meet their exacting quality standards. Obviously, the favorable contact already established with **Green Mountain Coffee Roasters** should be maintained. I would again recommend **CBI** and also **Volcafe Specialty**, who I believe also have a close working relationship, which must be respected when contacting them. Finally, I would recommend contacting **JBR Foods** in California, once a given supply of high quality coffee is in the warehouse. JBR buys most of its coffee directly from small and medium producers in Central America, using 3-year, guaranteed price contracts, once they are convinced of the quality of the coffees **and** of the reliability of the businesses. Currently, JBR is paying between $1.25 and $1.30 per pound FOB, in a market that has oscillated around $0.45 to $0.50.

There are many potential buyers, and probably some better or more interested in African coffees than those named. I believe that once the results of the cupping of next year's crop are known, selecting a few agents for Europe and the U.S. will be more feasible.

Contacts for the above companies:

John Schluter
Edm. Schluter & Co.
1, Rue Morache
C.P. 170
1260 NYON
Switzerland
Tel: (41) 22 361 75 21
E-mail: schluter@nyon.ch

Robert Babington-Smith
Cooperative Business International
500 West Wilson Bridge Road
Suite 220
Worthington OH 43085
United States
Tel: (614) 888-4883
E-mail: rbsmith@cbi-global.com

Alan Nietlisbach
Volcafe Specialty
7 Beyer Court
Novato CA 94945
United States
Tel: (877) 898-2588
E-mail: alann@volcafespecialty.com

Pete Rogers
JBR Gourmet Foods, Inc.
1933 Davis Street, Suite 308
San Leandro CA 94577
United States
Tel: (510) 638-1300
E-mail: peter@jbrfoods.com

ANNEX I : SCOPE OF WORK AND DELIVERABLES

A. The objective (and Scope of Work) of this consultancy is to:

- Assess the capabilities of coffee washing stations;
- Instill and reinforce the concept of quality among ADAR clients responsible for quality and the logistics of managing the flow of coffee;
- Recommend regarding the approach and activities of ADAR to positively affect the commercial performance of targeted investors/operators;
- Provide a processing flow chart for specialty coffee from washing station to market, including quality specifications and quality assessments for investors;
- Develop the notion of market orientation and management of the flow of coffee from farm to export, including the organization of the process of involving small producers;
- Provide a buyer list and description for marketing future coffee.

B. Compliance with the SOW will be satisfied by:

- Presenting a written report providing recommendations for an initial market development and directions and a twelve month work plan;
- Briefing the ADAR team regarding follow-on quality confirmation and marketing activity;
- Discussing with individual operators and/or associations regarding processing and marketing;
- Electronically transmitting the final to ADAR.