

# **COFFEE PRODUCTION AND COMPETITIVENESS IN YEMEN**



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**YEMEN**

# COFFEE PRODUCTION AND COMPETITIVENESS ASSESSMENT AND RECOMMENDATIONS

## Executive Summary

David Roche, Technical Director of the Coffee Quality Institute (CQI) and Steve McCarthy of ACDI/VOCA traveled to Yemen between November 6 and 16, 2006. The following report is based on their direct observations in the field as well as discussions with key coffee industry representatives.

The Yemen coffee industry is one of legend, and farmers have been growing a product highly prized on international markets for centuries. Coffee is literally part of Yemeni culture. From its birthplace in Ethiopia, coffee was brought to Yemen and commercialized. Yemen coffee was exported almost solely out of the port of Al Mokka and its unique flavor characteristics have been sought after from all over the world. It is from there that the coffee term 'mokka' or 'mocha' came about. Yemen's strong flavored coffees were also blended with the smoother, more buttery flavors of Indonesian coffee to produce probably the most widely known name in coffee, Mocha Java.

Yemen coffee producers receive some of the highest prices for coffee in the world, but also have some of the lowest yields. There are important constraints to the shrinking coffee sector, such as the production of qat, lack of available water, a fragmented industry, and lack of traceability from producer to the market. At the stakeholder meeting held during our visit, the decision was made to form the Yemen Coffee Improvement Association. Pilot activities among key stakeholders were agreed upon and launched during a meeting with all players at the Agriculture Minister's offices in Sana'a. This is viewed as a powerful first step to improving the future of coffee in Yemen.

The suggested action items begin with a thorough study of the *value chain* from the producer all the way through the buyer. Key industry members should attend international activities, such as the February 2007 Eastern Africa Fine Coffees Association (EAFCA) annual conference in Ethiopia and the May 2007 Specialty Coffee Association of America (SCAA) annual conference in Long Beach, California. These would be effective first steps in providing competitiveness opportunities. A calendar of events will be developed to include technical training in partnership with Yemen industry members. This will include production areas of pruning, nutrition, water management, shade and husbandry to increase yields and to develop "pilot" or model farms in select areas. Processing expertise is needed to improve percentages of specialty grade coffees (quality and consistency).

Quality, traceability and consistency are also factors that need improvement to meet current buyer demands. Finally, quality control through cupping training using the SCAA standards will be addressed. Developing standards will also assist Yemen in meeting the important WTO membership requirements.

## **Background:**

The country currently produces approximately 11,000 tons of coffee of which between 15 -20% (2,000 tons) is considered export quality. In recent years there has been a growing demand in the international specialty coffee market for highly prized, unique coffees. Yemen coffee still fetches some of the market's highest prices, yet Yemen's coffee sector has been in sharp decline. The coffee industry's decline is due to a number of reasons including lower productivity, increasing demands for water and, significantly, competition with larger economic returns to farmers of qat.

To increase the Yemen coffee industry's competitiveness from a value chain perspective several constraints will need to be overcome. First and foremost is developing a strategy that will, at the very least, make coffee somewhat more economically competitive with the highly lucrative but socially, economically and environmentally damaging growing of qat.

## **The Value Chain:**

The Yemeni coffee value chain is relatively straight forward from producer through to trader/exporter. The system however is characterized by large numbers of relatively small transactions throughout the chain and particularly at the lower end. There is a lack of transparency in the process as there is little information flow among actors in the chain. Producers typically harvest their crop, dry it and then market it to local collectors or merchants. In many cases, producers are both farmers and small merchants, further fragmenting and congesting the transaction chain. Coffee is viewed as somewhat of a reserve or savings fund, so many small producers hold their coffee at the household level until sale is necessary for cash flow. These sales are usually small in volume and the producer generally takes the price offered by the local collector. Local collectors will then sell on to larger collectors for further consolidation and the product is then channeled to processors/millers and finally on to either the domestic market or for export.

Due to small transaction size at the producer level and a large number of merchants/collectors at the local level, market inefficiencies and small price-margins characterize the value chain. Prices paid to producers are still some of the highest in the world for Arabica coffee. For the smallholder producer average holdings are generally  $\frac{1}{4}$  to  $\frac{1}{2}$  hectare from which they produce about 150 – 200 kg of green coffee. From discussions with producers we estimated that the average production on smallholder producer farms is around 350 kg/ha. The farmer is generally paid a flat price for dried cherry with no quality incentives at this level. Collectors generally pay between 500 – 600 rials (\$2.50 - \$3.00) for 1 kg of dry cherry which normally, depending on the variety, converts at about a 50% ration to green coffee. Thus, farmers are being paid the equivalent of \$5.00 - \$6.00/kg for green coffee. In international coffee price terms this equates to (\$2.27 - \$2.72) per pound. This is equal to some of the highest priced and more exceptional specialty coffees from places like Ethiopia, Kenya, Guatemala and Columbia. It is more than twice the current New York commodity market (NY "C") of approx. \$1.10/lb. While this price structure seems favorable for the producer, poor production techniques, lack of water, low yields and high production costs have hampered coffee expansion, especially in comparison to growing the easier and more lucrative qat.

Only when coffee reaches the larger collectors and processors is there any real attempt to exercise quality control and grading measures to separate export quality from domestic. The chain is characterized by a lack of trust throughout with little incentive to increase the levels of export quality. The larger traders deal exclusively with collectors both at the local level and the regional level. Usually four to five collectors at the regional level receive coffee from as many as a hundred at the local level. All would like to see more coffee meet the quality requirements of the higher value international markets, however there has been little transfer of information down to the farmer about measures that could be taken to improve quality to meet those standards.



**Local Collector in Bani Mater**



**Medium Scale Collector in Sana'a**

Local collectors will bulk-dry cherry purchased from farmers and sell to larger collectors at around 1100 – 1200 rials/kg. The collectors/bulkers perform some sorting and grading, depending on the requirements of the larger collector or exporter, but this is generally minimal. The larger collectors will then further grade and sort cherry before milling into green coffee. Green coffee is then bagged for sale to exporters/processors (roasters). Most exporters reported serious quality problems when dealing with collectors, such as large percentages of foreign matter, discolored or broken beans from milling, and high moisture content levels. Exporter purchase price of green coffee from larger collectors was generally reported by several exporters to range from 1100 – 1450 rials/kg (\$2.50 - \$3.30/lb). The exporters were somewhat guarded when asked about their sale prices to buyers, with Al-Kbous, Sowaid and Yemen Coffee Processors reporting prices as high as \$8.50 - \$9.00/kg (\$3.86 - \$4.10/lb). Average prices of around \$6.00/kg (\$2.73/lb) were cited by the four major exporters. Starbucks is by far the largest single buyer of Yemen coffee, dealing primarily through Volcafe, and exporters reported sales to several other buyer/brokers including Atlantic, American Coffee and Royal Coffee.



**Yemen Coffee Processing Company Plant**

A high percentage of poor quality coffee reaching the exporter is the reason only 15 – 20% meets the quality requirements of the high-value specialty markets. If Yemen is to benefit from its comparative advantage in the specialty market and increase the volumes entering this market, a competitiveness strategy will need to be developed that includes all stakeholders in the process. A shift in market channels that allows for educational opportunities will lead to positive benefits and ultimately a more balanced power relationship between and among all stakeholders.

This strategy should encompass three elements:

- The identification of the industry's competitive advantage (opportunities & constraints)
- The development of a commercial up-grading strategy (investments & who will make them)
- The creation of a process that will sustain competitiveness (Coffee Improvement Association)

To begin this process, an action plan needs to be developed and implemented. Recommended action items to initiate this process are as follows:

1. The formation of an association that provides a forum for all actors to discuss strategies for improving coffee quality and increases the percentage of coffee entering the export market.
2. A thorough value chain analysis that examines the entire transaction process and identifies opportunities and constraints. These can then be addressed in an all-stakeholders meeting that results in a competitive business plan to address constraints and develops an industry up-grading (investment) strategy to take advantage of opportunities.
3. The development of an information and market understanding program that emanates from the end markets and feeds back through all actors in the value chain.
4. The development of producer groups that can operate at economies of scale reducing transaction costs (volume, transportation) and increase bargaining power with larger volume sales. Possible interventions could include the establishment of village coffee warehousing where higher volume transactions could be consolidated and direct sales to processors and exporters negotiated.
5. The eventual consolidation of the bulking/collection function which would ultimately reduce the number of small collectors in the chain, making them more efficient and adding value to transactions. (Coffee farming will need to become the more attractive activity because of increased incentives to quality production.)

### **The Yemen Coffee Improvement Association:**

The Yemen Coffee Improvement Association is key to increased competitiveness in the sector. Now that the association has been formed it is imperative that their momentum continues and expands. The association should receive assistance in the form of association development and capacity building to overcome an individual firm mentality and move towards an industry mentality. This will result in development of a united force in the market place. This needs to begin immediately to prepare the association's delegation who will attend the EAFCA conference in Ethiopia. Technical assistance such as training in quality, grading and cupping should also be done, if possible, before the EAFCA conference to help prepare the delegation's participation. All should be done to encourage and make it possible for a strong delegation to attend this conference.

## **Pilot Activity:**

A program of information flow and sharing is needed to foster an industry-wide “common language” of quality. This will create an understanding of quality grades, standards and specialty market requirements that needs to be embraced, developed and implemented. This should be done primarily by the association with outside technical assistance. The program should focus on training and skills development in specialty coffee attributes, market requirements etc. for all stakeholders from producer to exporter. The following chart identifies several key members from various levels of the industry who should receive technical assistance and then pass their knowledge on to others in the association.



The pilot activity will integrate the coffee sector through the channels from producer to exporter. It will work on parallel tracks to 1.) increase production and 2.) increase the quality and therefore the quantity going into the higher value specialty market. A primary focus of the pilot activity will be the development of an industry-wide integration and understanding of the coffee value chain so that all actors are aware of the market requirements and the practices necessary to meet those requirements. The goal of the initial phase will be to up-grade approximately 15 – 20% of the coffee currently being sold to the regional and domestic market to levels that meet the quality requirements of the specialty market. Targeted technical assistance will focus on key areas of the current production system and value chain to achieve this. The program will initially be implemented in targeted pilot areas (Haraz, Yaffa, Bani Mater).

In Haraz the pilot activity will be in partnership with The Haraz Project. The Haraz Project currently works with 500 families in the area, most of whom are coffee and qat farmers. To date the project has had encouraging results introducing better coffee cultivation techniques and introducing a transparent market system that will pay premiums for improved quality. They have also initiated a campaign to begin tearing out qat trees and replanting with coffee.

In the Bani Mater area, the pilot activity will work in partnership with the Hamdani Bros., whose family has been in the coffee business in the area for over 100 years. The Hamdani Bros. operate a local collector operation which feeds into their larger collection and milling facilities in Sana'a. They know virtually every farmer in the area, approximately 140 families, and have been successful in securing government funding to put in water catchments and a dam. The coffee is grown under some of the best production practices we saw. It is irrigated and fertilized with organic fertilizer, with good soil conditions and shade provided by some trees and natural shade provided by the surrounding mountains. The yields are reportedly the best in Yemen with 7 -10 kg of green coffee per tree being reported.

While Yemen has not had a great deal of success with cooperatives or producer groups per se, the Haraz Project and the Hamdani Bros. have been working closely with producers and gaining both their confidence and trust. In Haraz, designated farmer representatives work with producers to learn production and quality improvement practices. In Bani Mater the Hamdani Bros. have had a close working relationship with the producers of the area for decades. In both areas the introduction of more formal, organized producer groups that can exercise economies of scale will be investigated. One initiative will be to have the producer group perform many of the functions that are currently handled by the local collectors/merchants. This would significantly reduce the number of merchants who fragment the value chain with small low-value transactions and return them to their primary activity as coffee producers. This would allow the producer groups to institute quality improvement techniques, provide more cost-effective bulking at the local level, and deliver higher volume consignments to the large collectors and processors. Keeping the product in the hands of the producer through more of the consolidation and value added process will allow them to exercise market bargaining power and negotiate better pricing terms resulting in a higher return to producers.

The pilot program will have two primary thrusts, the first focusing on improvement of production techniques such as better water management, shade introduction, soil enhancement and plant nutrition. This is intended to increase both yields and the quality of cherry produced. The second goal is to focus on quality improvement by introducing up-grades in harvesting, drying, grading, sorting and product handling. A program of technical assistance and training that result in information sharing throughout the industry from producer to exporter will be initiated with focus in these key areas.

### Production

- Water Management
- Nutrition
- Improved nursery management
- Improved harvesting techniques
- Introduction of shade trees
- Improved (introduction) better pruning techniques
- Stumping old trees, removal and re-planting
- Sorting of cherry at the farm level
- Improved drying techniques and understanding

## Quality

- Expansion and capacity building of the Yemen Coffee Improvement Association (to include all key stakeholders in the industry)
- Sorting and Grading
- Processing expertise to improve percentages of specialty grades
- Training to understand and meet SCAA quality standards
- “Q” program cupping and grading training
- Participation and membership where possible in international Specialty Market activities such as the EAFCA Conference in Ethiopia in February and the SCAA conference in Long Beach, CA in May.

### **The Qat Issue:**

The task at hand is to increase the earnings of the Yemen coffee sector, including the income to producers, merchants, processors, and exporters through the enhancement of the industry’s competitiveness. Enhanced competitiveness means increased productivity (Michael Porter). This is achieved by increasing the value of the product to the consumer and/or lowering the cost of production. The Yemen pilot project will work on improvements in production practices, lower costs in the value chain, and increased productivity. The ultimate goal is to increase the quantity of high value specialty grade coffee for export. processing for specialty grade coffee, traceability and transparency, with the ultimate goal to increase the quantity of high value specialty grade coffee for export.

Yemen coffee economics are complicated in that while coffee has a relatively high return to the farmer it both competes and complements a major cash crop, qat. Qat competes with coffee for land, water and labor in that the returns from growing qat are considerably higher than the returns from coffee. But qat is a highly perishable crop that cannot be stored, needing to be sold in a relatively short time after harvesting. In interviews with farmers they state that the income from qat is used mostly to meet their daily needs or cash flow.

Coffee complements qat in that it is stored by the farmer and serves as a saving function or store of value. Coffee can be stored for more than a year and in extreme cases has been reportedly stored for up to ten years. The farmer sells his coffee as financial needs arise. Farmers interviewed have described coffee as a long term investment crop and qat as a short term income crop for daily needs.

The total national production value of coffee at the farm gate is estimated at \$59 million (11 thousand tons green coffee times YR 1,045 per kilo). The average planting per farmer is 0.291 hectares with 394 trees and a production of 114 kilos. Average income per farmer is less than \$600 per year (114 kilos times YR 1,045 per kilo). The net returns to family labor are \$23 per day, a relatively good return except when compared to qat. Total returns from qat can be more than ten times that of coffee.

See attached annex.

The high value Yemen specialty coffee prices range from a high of \$11.50 per kilo to an average of \$8.50 to \$9.00 per kilo. Total export of specialty coffee is estimated at around 2 thousand tons or between 15% and 20% of total production. The estimated value of these exports is approximately \$15 million. Coffee exports to Saudi Arabia are estimated at approximately 50% of the crop or 5.7 thousand tons. The local market is estimated at around 4 thousand tons per year. There is some confusion about the local market, some of it due to the importation of coffees from outside of Yemen for local consumption.



**Key Yemen Coffee Stakeholders Meeting at the Agricultural Minister's Office in November 2006**

### **Industry Organization:**

The Yemen Coffee Industry is currently very fragmented. In order to move forward and be more competitive, certain issues can only be resolved as an organization. It was decided that a *requirement* to accomplish this is the formation of the Yemen Coffee Improvement Association. Yemen coffee stockholders, both public and private, agreed that Yemen can increase coffee earnings through improvements in production practices and other factors throughout the sector. This will also enable access to donor resources and to increased involvement in the international specialty coffee industry.

The newly formed Yemen Coffee Improvement Association will need to:

- Identify the initial members and plan to expand to all segments of the industry including producers, local collectors, traders, processors and exporters.
- Begin formal organization to include a charter, which may require outside support
- Interact with other successful coffee organizations, such as EAFCA and SCAA. This should be done immediately to provide needed competitiveness opportunities.
- Develop a knowledge of the international specialty coffee market, which includes quality and traceability, through technical trainings.
- Understand the constraints and opportunities within current value chain.
- Hold a workshop that includes all stakeholders that takes the opportunities and constraints and incorporates them into a competitiveness strategy with an implementation plan that identifies industry up-grades needed and the sector actors who will make those investments.

## **Constraints:**

With the coffee industry declining in Yemen, it is important to identify the constraints and reasons for this in order to address action items to change the current trend. Some of these constraints are direct and some of them are indirect. It should be noted that addressing any of these issues will have a significant positive affect.

- Production of qat, which is lucrative and is the main reason that coffee production is declining. The producer will need compelling reasons to replace qat with coffee since producers make considerable profit by growing qat.
- Technical support is very limited, especially from the Agricultural Ministry. There had been some support from the French and there is still some assistance from USAID and other donors, but there is a lack of continuity.
- Water is very limited and water shortage is the main cause of low yield, along with poor plant nutrition. Qat production is partially responsible for water usage, but water retention methods are available that are not being utilized.
- All aspects of production and processing are in need of expertise. Yields, plant health and quality can all be improved with minimal changes in these practices.
- There is little information transfer from exporter to producer. This is affecting quality control throughout the chain.
- Lack of available traders (intermediaries) to purchase and transport to market.
- Farm size is very small with average size between .5 -1 hectare.
- Quality is inconsistent throughout the value chain.
- A need for competitive knowledge of the international specialty coffee market, especially as it relates to cupping and quality differentiation.
- Lack of traceability - current buyers of high priced specialty coffees are demanding to know where the coffee is produced and that the producer is receiving a fair price.

## **Action Items:**

There are several short term projects that can be implemented, beginning with the actual formation of the Yemen Coffee Improvement Association and launch of a pilot project. The pilot project will begin with a thorough study of the *value chain* from the producer all the way through the buyer. It should include international activities, such as the February 2007 EAFCA conference in Ethiopia and the May 2007 SCAA conference in Long Beach. A calendar of events should be developed to include technical training for both quality and yield improvement in partnership with Yemen industry members that are active in developing these activities.

## **Quality:**

Since the 1950s, the international price levels of coffee have been declining at an average rate of 2% annually. The current situation in the coffee industry requires that coffee producers focus, more than ever, on a differentiated supply of green coffee beans. Coffee producers of lower qualities can hardly compete against producers in Brazil and Vietnam. These high volume coffee producing countries enjoy major economies of scale and comparative cost advantages. Larger roasters have been proven to substitute lower grown Arabica coffee for (cheaper) Brazilian and Vietnam coffee beans.

Specialty coffee can be defined as coffee with zero flavor-defects and an excellent cup-value. Yemen coffee is considered high quality but also very inconsistent due to processing and handling methods. For almost 20 years, specialty coffee has changed the awareness of consumers about coffee tremendously. The U.S. specialty coffee industry is responsible for import of approximately 3.25 million bags of green coffee. The annual growth trend is 5 to 10%, especially for “distinct” coffees

### Developing a coffee culture based on the concept of cup-value

Sensory characteristics include elements such as aroma, body, acidity, flavor and aftertaste. Professional tasters follow a protocol for the evaluation of these characteristics. Well-trained tasters are able to separate personal preference from the sensory evaluation on the cupping table and this is an essential element in determining the potential of a coffee to satisfy needs of roasters and consumers. The next step is to then apply the same method of evaluation for these criteria, which is the cupping & tasting protocol to create a “common language”. The implementation of cupping protocols involves more than purchasing cupping tables and utensils only. It requires the effective transfer of know-how by cuppers from consuming countries that are proficient with the cupping protocols as developed by the Specialty Coffee Association of America (SCAA). In addition, it is essential that evaluations for cup-value are done at various stages in the production cycle until the product reaches the buyer. As a result, producers and exporters gain valuable knowledge about the flavor attributes of the coffee they are trying to sell, which strengthens their position in negotiations.

### **Yemen Cupping Training:**

Yemen has little or no coffee culture, even though there exists a rich history of coffee production. With the expansion and capacity building of the Yemen Coffee Improvement Association (to include all key stakeholders in the industry), some of these issues can be addressed through technical trainings. In addition, participation and membership in international Specialty Market activities such as the EAFCA Conference and the SCAA conference will increase knowledge of quality and provide market contacts.

A series of workshops should be started as soon as possible to teach cupping for specialty coffee standards. Quality, traceability and consistency need improvement to meet current buyer demands. Developing national coffee standards will enable Yemen to meet WTO requirements and communicate better with buyers.

### **Processing:**

Technical training for quality improvement should begin with processing expertise to improve percentages of specialty grades. Yemen has traditional methods of processing that actually add certain quality characteristics, but also causes defects and inconsistency. This is an area where simple changes will immediately improve the percentage of specialty grade coffees available to the export market and competitive opportunities.

## Harvesting, Drying and Storage

The current practice is to harvest coffee cherries and sun-dry them. Often, there is a mixture of various maturities and the coffee cherries from different days are mixed in the same batch. The dried cherries are then stored for a period ranging from 6 months to up to 10 years. These are stored as a sort of “bank account” to be sold when cash is needed. Technical assistance can provide knowledge of avoiding defects and may also include a recommendation for centralized storage of dried product. It is recommended to:

- Improve harvesting techniques by sorting of cherry at the farm level
- Improve drying techniques and understanding of quality drying
- Separation of lots and traceability back to the producer



**Coffee Cherries Drying from Different Harvest Dates**

## Sorting, Grading and Packaging

After the dried cherries are either processed by the middleman or sold directly to the buyer, it still needs to be sorted by quality. Only a small percentage of export quality comes from this and it is usually blended with coffee from other producers or even other regions. Many of these mills were dirty and have outdated equipment. In addition, many impurities are found in the product and needs to be sorted out. It is recommended to:

- Improve knowledge of processing specialty coffee, provide traceability and to separate lots based on quality. Training in newer technology.
- Increase communication from producer, intermediaries and millers/exporters.
- Begin basic cupping training for quality control and differentiation.



**Nails, Rocks and Trash from Mill**



**Equipment in Poor Condition**

## **Production Issues and Action Items**

### **General Husbandry**

Many of the fundamentals of coffee farming are not being followed and with some technical assistance, could improve plant health, yields and quality, such as:

- Improved nursery management
- Introduction of shade trees
- Improved (introduction of) pruning techniques
- Stumping old trees, removal and re-planting

### **Water Management**

Water is very limited in Yemen and although coffee has survived for hundreds of years, lack of water is the main constraint to production. It has been reported that the water table is getting lower, so the use of wells should be limited. However, catchments systems can be improved for limited irrigation. Mulching will also assist in retaining water, along with the introduction of leguminous shade trees to create a buffer and provide nutrition.

### **Nutrition, Composting and Shade**

There is very little nutrition being added to the coffee trees. This can be improved by training in sustainable methods of production, utilizing worm culture, composting methods and especially green manure cover crops. Nutrition can also be supplanted by using certain leguminous shade trees and providing a buffer.



**Water and Nutrition Stress**



**Good Yields under Shade Trees**

When starting new plantings, removing qat or even replanting new coffee trees, it is very important to ensure that the land is prepared properly, consider more extensive land preparation and to create an environment more favorable to coffee. The grower is fighting elements that some degree of “buffer” will reduce if shade and sustainable management is implemented. It will be important to work closely with experts to select the correct species for green manure, cover crops and shade trees. It is suggested that a model farm at several locations be selected for research into these methods before using any new strategies across the country.



**Terraces being prepared for new coffee plantings after qat removal and sorghum planting**

### Recommendations for Improvements of Growing Conditions: Shade Trees, Green Manure and Cover Crops

After field is prepared, plant a leguminous green manure crop during the rainy season. Green manure and cover crops also vary depending on the location, but some of the most commonly used for coffee in Zimbabwe and Malawi (also very dry) are: Green leafed or Silver leafed Desmodium (*Desmodium intortum*), Pigeon Pea (*Cajanus cajanus*), Arachis pinto, Soybeans and sun hemp are often used as annuals (very good). Additional species recommendations can be obtained through research stations, such as ICRAF. Legume rotations are a key element in sustainable farming practices.

Shade and Forage trees for coffee have been researched extensively and general information can be found through a network of research organizations. In the humid tropics, much of the research has been focused at the CATIE research station in Costa Rica, while Australian, African and Asian research can be found for the semi-arid tropics, such as Zambia. Some of the species recommended, but are not limited to: *Leucaena leucocephala* and *diversifolia*, *Gliricidia sepium*, *Acacia nilocita*, *Albizia lebbeck*, *Chamaecytisus palmensi*, *Cratylia argentea*, *Sesbania sesban* and *grandiflora*. Some species still being investigated are: *Acacia aneura* and *tortili*, *Albizia chinensis*, and *saman*, *Calliandra calothyrsus*, *Erythrina* species (heavily used in Central America), *Faidherbia albida*, *Flemingia macrophylla*, *Prosopis juliflora*.

### **Conclusion:**

While there are a number of factors that hamper competitiveness and growth of the Yemen coffee sector, there are also several opportunities in the current market which can be optimized for the benefit of all stakeholders in the market chain. First and foremost is the reputation that coffees from Yemen still command in the market place. Despite problems with quality consistency and reliable quantities, Yemen's coffee is still highly sought after in the specialty market and demand far exceeds current supply.

With the rapid growth witnessed in the specialty coffee industry, the opportunity to increase the quality of current production targeting that market is enormous. The regulatory environment is rather benign and allows for active and open private sector participation. The industry in Yemen currently lacks the sophistication to deal with the globalization of the specialty coffee market in an effective and efficient manner. Adopting a quality-based focus with a niche market approach is needed. The aim is to work towards a common goal, integrating the entire industry with a strategy that creates incentives and buy-in from all actors in the various market segments.

The formation of the Yemen Coffee Improvement Association is an important first step. This association can provide the leadership and direction to keep the momentum moving forward. The pilot activity will accomplish a great deal in defining a quality-based program that drives both vertical as well as horizontal integration within the industry and encourages cooperation between and among firms. The association, however, is the catalyst that must be a proactive force driving the industry's strategy. The pilot activity, in addition to developing improvements in quality and production, will need full support of the members to ensure that the association continues to strengthen and builds the capacity to represent Yemen's coffee industry as a unified voice in the global market place.