

**Measuring Consumer Interest in
Mexican Shade-grown Coffee:
An Assessment of the Canadian,
Mexican and US Markets**

Commission for Environmental Cooperation

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Executive Summary

The objective of this report is to present the findings of a market analysis measuring consumer interest in, and potential demand for, Mexican shade-grown coffee in North America. This report on the *consumer* side of shade-grown coffee is complementary to the work of the Commission for Environmental Cooperation in developing environmentally sound and sustainable *production* criteria. These criteria have been developed in conjunction with the Smithsonian Migratory Bird Center. A synthesis report assessing the implications of the production and consumption side of shade-grown coffee and its implications for various stakeholders in support of sustainable development will be released in late 1999.

In describing actual and potential consumer markets, this report provides supporting information on recent trends in world and North American coffee markets, trends in gourmet and organic coffees, as well as organic foods more generally, and issues that arise from promoting increased international trade in shade grown coffee.

This report represents among the most comprehensive assessments of consumer interest in shade-grown coffee. Among its key findings are:

- On average, one-in-five consumers—or 22 percent of consumers in Canada, 19 percent in Mexico and 21 percent in the United States—were “very interested” in purchasing Mexican shade-grown coffee.
- A majority of consumers—57 percent in Canada, 63 percent in Mexico and 58 percent in the United States—expressed at least “some interest” in purchasing shade-grown coffee from Mexico.
- This study confirms other market surveys, which demonstrate a certain reluctance among consumers to pay a price premium for Mexican shade-grown coffee. Results suggest that US residents were more sensitive to paying US\$1 more for a pound of shade-grown coffee than either Canadian or Mexican consumers, who were more willing to pay such a premium.
- While interest in environmental protection appears strong, this study confirms that consumer interest in Mexican shade-grown coffee is most determined by the perception of superior taste. Results suggest that marketing approaches that convey “mountain grown coffee” elicit a more familiar and positive response than “shade-grown coffee.”
- While Canadians tested in focus groups expressed a taste preference for Mexican shade-grown coffee over other blends, the US focus groups found that shade-grown coffee had either a taste comparable in quality to sun-grown coffee, or marginally below conventional coffee.

Among the conclusions of this market study are the following points:

- While consumers are very interested in environmental issues and the concept of shade-grown coffee, quality of taste represents *the* key factor in consumer preference.
- Mexican shade-grown coffee can compete with gourmet coffees based on taste. However, results suggest that performance based on taste has been inconsistent in the past, although improvement has recently been made.
- Any promotional campaign in support of Mexican shade-grown coffee should emphasize consistency of high-quality taste. Results of this study also show that the most effective marketing campaign is one which links quality and taste of shade-grown coffee with positive health effects and positive environmental effects, respectively.

I. Introduction

Our thirst for coffee seems almost insatiable. By one estimate, 3,300 cups of coffee are consumed *every second* of the day worldwide (*Le Figaro* 1999). Today, the world market for all types of coffee is conservatively estimated at US\$11 billion per year (Sturdivant 1999).

However impressive these figures are, though, they tell us only part of the coffee story. People are not simply drinking more coffee. They are increasingly discerning about the quality and taste of the coffee they consume—weighing the health effects of different types of coffees consumed—and they are increasingly knowledgeable about the environmental effects of coffee production.

Consumer awareness about the quality of different coffees has increased steadily in recent years. Market studies show that consumers are more discriminating about differences between groups of coffee, including distinctions based on product origin, taste characteristics, such as smoothness, aroma and acidity, organic characteristics, and other factors.

Each day, this interest in quality is translated into bottom-line purchasing decisions. One example of this emphasis on quality is the spectacular growth in the world market for organic goods generally: some estimates predict growth rates of 10 to 25 percent per year up to 2006 or 2010 (Courville 1999). Today, consumers worldwide spend an estimated US\$11 billion per year on organic foods, or roughly 0.5 percent to 3 percent of their total food bills on organic foods (Alberta Agri-Food Trade Group 1998; Courville 1999).

Within the organic food market in general, organic coffees continue to carve out an important market niche. Estimates suggest that current world demand for organic, certified coffee outstrips supply (Courville 1999). The primary market for organic coffee located in the United States and Europe. While precise estimates of total organic coffee markets remain difficult to establish, according to one estimate, organic coffee production in 1991–1992 was roughly 25,000 tons per year, or roughly 0.5 percent of total coffee exports (Dardon 1996; UNCTAD 1996; Courville 1999).

This increasing demand for organic coffees can be explained both in terms of a growing movement among consumers to think about the health effects of the products they consume, as well as by the remarkable popularity of specialty gourmet coffees. To illustrate, in the United States—home to the largest coffee market in the world—demand for specialty coffees is the fastest growing of any coffee market segment (Sturdivant 1999). Today, specialty coffees comprise roughly 30 percent of the US market, or approximately six million (60-kg) bags of coffee (*ibid.*). (In response to these market trends, several major coffee producers—including Brazil and Colombia—are increasing their production and export of organic-grown coffee to meet expanding demand. Even Starbucks is now offering an organic line of coffee.)

In addition to these two powerful forces—growing interest in organic goods and the increase in specialty coffees—a third factor is starting to influence consumer coffee choices: that is, concern about the environment. Although not nearly as potent a force as the organic or specialty coffee market component, concern about minimizing the adverse environmental effects of coffee production is growing. For example, in the United States today, shade-grown coffee represents a US\$30 million business, or one percent of total sales in the gourmet coffee market (Sturdivant 1999). However, the results of this study's point-of-sales assessment, which was supported by a product promotional campaign consisting of radio ads, print ads, point-of-sales materials and employee training, showed that shade-grown coffee sales among participants of the CEC-sponsored study *averaged five percent of total sales in gourmet coffee* (Griswold 1999).

Based on this figure, the potential market for shade-grown coffee is significantly higher than current market penetration: the total value could be well in excess of US\$100 million in the United States alone.

Approach

Two main questions posed in this report¹ by the Commission for Environmental Cooperation (CEC) are: to what extent are consumers in Canada, Mexico and the United States interested in understanding the environmental implications relevant to the coffees they purchase, and, if informed that Mexican shade-grown coffee demonstrates several positive environmental and other attributes compared to sun-tolerant coffee production, to what extent are they interested in purchasing it? To address these questions, three separate but reinforcing investigations were undertaken.

Foremost was an effort to arrive at a quantitative understanding of consumer interest and potential demand for Mexican shade-grown coffee, even if a price premium were involved. Separate “omnibus” telephone market surveys were conducted by three marketing research groups located in Canada, Mexico and the United States in late 1998 and early 1999.² With minor variations, identical questions were asked of a total of 2,500 people: 1,000 in Canada, 500 in Mexico City, and 1,000 in the United States. Annex 1 provides more detailed information on the manner in which these investigations were conducted.

Results of the three surveys were then aggregated and assessed by two outside analysts: a marketing expert (Delaney Research 1999) and an independent consultant with expertise in shade-grown coffee (Courville 1999).

In the second part of the study, focus group taste tests were conducted in two locations—San Francisco and Montreal—to measure consumer response and market positioning concepts to Mexican shade-grown coffee, compared to other coffee brands.

The third part of the study involved a partnership with the company Sustainable Harvest—the leading importer of certified shade-grown coffee in the United States—to develop, based in part on the results of the focus group analysis, test consumer marketing and educational campaigns introducing sustainable coffees around the United States.³ The same company undertook point-of-sale monitoring of Mexican shade-grown coffee in the first quarter of 1999 in the Washington, D.C. area, at the following retail outlets: Atomic Café, Bethesda Food Co-op., Café Renee, ME Swing, Politics and Prose, Savory Café, Sirius Coffee, Café Monet, Kefa Café and Soho Café. Further focus group tests were undertaken in Montreal, Canada, to test consumer preference for Mexican shade-grown coffee compared to other types of coffee.

Classifying Coffee as Shade-grown

In a related undertaking, thirteen researchers were convened just outside Xalapa, Veracruz (Mexico), at the *Jardín Botánico* of the *Instituto de Ecología* for a workshop on “Defining Shade Coffee.” Sponsored by the CEC and conceptualized and organized by the Smithsonian Migratory Bird Center in Washington, DC, the workshop sought to examine shade coffee within the Mexican context and establish criteria that might ultimately be used in a certification scheme at the national level. Detailed results of this expert panel are presented in Annex 2 of this report. The panel concentrated on evolving categories pertinent in defining shade coffee as a conservation tool in sustainable development. The criteria developed represent the minimum threshold in biophysical parameters and cultivation methods that any given farm must satisfy in order to be called (and hence market its

¹ The principal authors of this report are Ania Brzezinski and Scott Vaughan of the Commission for Environmental Cooperation, who have based their work upon several studies commissioned by the CEC in 1998. These include telephone marketing surveys, point-of-sale and focus group surveys, and taste test surveys, as well as background information and data analysis work by Sasha Courville and John Delaney. Copies of the complete marketing surveys and background information are available to readers by contacting the CEC, Trade and Environment Unit, 393, rue St-Jacques Ouest, Bureau 200, Montréal, Canada H2Y 1N9, or by e-mail at <svaughan@ccemtl.org>.

² These firms included Bruskin/Goldring Research (USA), Thompson, Lightstone & Company Limited (Canada) and Metropolitan (Gallup México).

³ See Griswold 1999.

product as) “shade coffee.” Growers should strive to comply with these recommendations where possible. The experts also recommended ways that certain growers might attain elevated status by improving their management practices.

In late 1999 the CEC will release a synthesis report, detailing the implications of the marketing analysis, as summarized in the present report, on practical methods of implementing the environmental criteria developed in conjunction with the Smithsonian (referred to above).

II. The Context of Coffee Production and Coffee Markets

Coffee is native to Ethiopia, where it grows as a small tree in the understory of tropical forests. Of the 6,000 species of the *Coffea* genus, we drink two types: *Coffea arabica*, or Arabica coffee, which accounts for 70 percent of world coffee production, and *Coffea canephora*, commonly known as Robusta coffee. The traditional varieties of Arabica coffee, such as Typica and Bourbon, are grown under shade conditions in rainforests.

Coffee production has changed over time. Traditionally, all coffee was grown under a canopy of shade trees because most coffee plants could not tolerate direct sunlight. This approach includes rustic, low-intensity coffee cultivation, in which coffee plants form part of the small shrub/tree vegetation of a forest understory and in which minimal areas of forests need to be cleared to allow for the introduction of coffee saplings. However, new hybrid coffee plants have been bred—Cattura, Catuai, Mundo Novo, and Variedad Colombiana—all of which can be cultivated without shade and in full view of the sun. These newer, sun tolerant coffee hybrids are shorter and denser, allowing more plants to be cultivated per acre, and with the aid of chemicals, per acre production is much higher than traditional shade-grown coffee. In the extreme situation, sun-tolerant coffee production thus involves growing monoculture crops, requiring the extensive use of agrochemicals, as well as much higher financial investments, intensive labor use, and often special water irrigation systems. In between these two extremes of coffee production are different approaches, each of which exerts different impacts on the environment.

Mexican Coffee Production

At the end of the eighteenth century, coffee was introduced in Mexico from Cuba. According to the *Consejo Mexicano del Café* (1996), 99 percent of Mexican coffee is produced under shade conditions, and 63 percent of coffee plots are comprised of traditional, low-yield varieties such as Typica and Bourbon. Other estimates suggest that roughly 10 percent of annual Mexican coffee production is under full sun conditions, leaving 90 percent to different degrees of shade-grown coffee (Moguel and Toledo 1996).

Mexico has witnessed a dramatic increase in the production of organic and shade-grown coffee: from an estimated 150,000 bags of coffee in 1996–97, to over 5 million bags in 1997–98.

Different reasons explain why the majority of Mexican coffee remains predominately shade-grown; among the most important is the fact that an extremely large percentage of coffee producers in Mexico—92 percent—own less than five hectares. Smaller landowners are typically unable to mobilize the large capital investments required to purchase more expensive hybrid coffee varieties, as well as purchase chemicals needed for full sun coffee varieties. By contrast, in major coffee producing countries like Brazil, Colombia and Costa Rica, significant efforts by larger land-owners, coupled with government assistance, have included the introduction of improved hybrid varieties, cutting down of shade trees and forests to allow for intensive coffee production, and the intensive application of agrochemicals (Janssen 1997).

From 1991 to 1995, Mexico was the fourth-largest producer of coffee in the world after Brazil, Colombia and Indonesia. In recent years, Vietnam has dramatically increased its production to take fourth place: Mexico is now the fifth largest producer in the world, with 5.5 million bags (60 kg) of green beans (1997/1998). In Mexico, coffee production is the principal economic activity for an estimated three million people in over 4,500 communities, where 21 dialects are spoken.

According to the International Coffee Organization, Mexican coffee is placed in the category of “Other Milds,” a grouping of Arabica coffee that is below the category of “Colombian Milds” in quality and price, but above the category of Brazilian and other Arabicas. Within the “Other Milds” category, Mexican coffee compared to other coffees in this category ranked at the same quality level as coffees from El Salvador and Nicaragua, and below coffees from Costa Rica and Guatemala. This ranking affects price differentials relative to the New York “C” coffee market. Generally, this relatively negative ranking of Mexican coffee generally stems from inconsistencies in quality. However, in recent years world coffee markets have recognized that while there may be inconsistencies with Mexican coffee overall, there is increasing evidence of high quality coffees that are emerging from Mexican producers.

The Benefits of Shade-grown Coffee

Before looking at the marketing side of the equation, it is useful to first provide an overview of the perceived benefits of Mexican shade-grown coffee:

1) Environmental Benefits

- In many areas of Mexico, coffee plots are the only forested areas remaining on mountainsides. Given considerable pressures on land and forests, shade-grown coffee areas can help protect remaining forests from the clearing of an estimated one million acres annually for different commercial activities, including lumber business, cattle ranching and subsistence farming.
- Since Arabica coffee grows on steep mountain slopes, this type of production provides protection from soil erosion and prevents the loss of important watersheds.
- Shade coffee plants and adjacent shade trees play an important role in carbon sequestration, and hence their environmental value will increase as the international climate agenda proceeds.
- Shade coffee areas are an important habitat for a variety of bird species, both residential and migratory. For example, recent work by the CEC and the Smithsonian Migratory Bird Center has shown that, next to virgin forests, shade-grown coffee provides the best habitat for many hundreds of different bird species.
- In addition to protecting natural habitats, shade coffee areas help conserve the diversity of native trees and the biodiversity of tropical forests. In addition, shade-grown coffee provides important ground cover during the dry season, which conserves topsoils and their nutrients, and supplies natural habitats for species other than birds, including mammals and reptiles.

2) Health Benefits

- Unlike sun-tolerant, intensely produced hybrid coffees that rely on pesticides and other agrochemicals in their production, shade-grown coffee is for the most part organically grown. Coffee produced in this manner receives enough nutrients naturally from adjacent trees, bushes, and grasses. However, results of the market survey suggest that more work is needed in explaining to consumers the relationship between health benefits, better taste and environmental benefits.
- There is a complementary relationship between shade-grown and organic coffee. However, they are not identical terms: shade-grown coffee may or may not be organically grown: that is, in some countries, shade-grown coffee is grown with chemical inputs, although in Mexico the vast majority of shade-grown coffee uses none. Likewise, organically grown coffee may or may not be shade-grown. Again, in Mexico the vast majority of organic coffee is also shade-grown coffee.
- This study confirms the findings of other studies which demonstrate that “organic” production of foodstuffs is becoming a powerful marketing concept. In particular, consumers around the world are becoming increasingly aware of organic coffee, and the world market for organic coffee is growing at rates of 10–15 percent per annum in many consumer countries, particularly in Northern Europe. (Recent studies suggest that European consumers are much more aware of organic coffee and certified organic coffee than North Americans. This can be explained both by the higher percentage of organic farms in Europe, government support of organic farming

through, for instance, European Council Resolution 2092/91, more effective consumer education and awareness campaigns, and cultural factors.⁴)

- The findings of this study strongly suggest that health benefits of shade-grown coffee needs to be emphasized, together with quality taste. In making this link, a better understanding is needed of the relationship between Mexican coffee certified as “organically grown” and coffee certified as “shade grown” (see Annex 2).

3) Better Taste

- Some argue that because it is grown on mountain slopes, at higher altitudes and without chemical inputs, shade-grown coffee tastes better: the coffee beans ripen more slowly, allowing them to develop a higher sugar content which produces a smoother, richer, better taste.
- Although there are standard criteria used by coffee tasting experts to judge coffee quality—texture, aroma, acidity—taste among most consumers is less exacting, and more subjective. At the same time, with the growth of specialty coffee markets and coffeehouses in Canada, the United States and Europe, consumers are becoming increasingly aware of differences in coffee quality tastes. They are starting to appreciate differences between blends and single-origin coffees, and to be able to match a roast to a particular coffee brand. At the same time, this study shows that providing information to consumers about coffees is a balancing act: while consumers want information about their coffees, they don’t want too much. Instead, they want simple, clear and compact information that can be quickly grasped.

4) Social Benefits

- The fact that Mexican coffee is typically produced by small landowners means that shade-coffee production delivers multiple benefits to producers and their families apart from revenues from coffee. These other benefits include the firewood, medicinal plants, fruits—including oranges, mangos, avocados, sapote and guayaba—herbs and greens.
- Social benefits also include a greater connection between families and the land, and greater community cohesion and the protection of community values, compared to large-scale, intensive coffee production.
- The results of the US-sponsored focus groups in this study point to an interesting feature when approaching how to convey social and environmental issues to consumers—that is, the potential problem of guilt in purchasing decisions. This issue has arisen both in the CEC study and in the experience of a number of coffee company marketing representatives. There is a danger that marketing a brand of coffee by emphasizing its environmental or social characteristics could invoke guilt feelings and a rejection of that product. For example, in one study, the following concept was discovered: many consumers feel that coffee is bad for them, but enjoy indulging in it nevertheless. The last thing they want to hear is that the coffee they drink destroys forests and that the people picking the beans are exploited or living in poverty. While all this might be true, conveying these negative factors in a marketing campaign will likely have a negative response. Therefore, the results of this study strongly suggest that the concept of shade-grown Mexican coffee must present a *powerful positive image to consumers*.

5) Economic Benefits

- Coffee is the main source of income for over three million Mexicans in over 4,500 communities. This income is crucial to meeting all expenses, including those for food, medicine, education and so forth. Shade-grown coffee production is thought to be a more viable economic activity over the long run than chemical intensive, sun-grown coffee. Different reasons have been advanced for this, including the highly volatile nature of world coffee markets, which means that small

⁴ Among the recent examples of this difference in approaches to food criteria are efforts by the EU to halt imports of beef from the United States and other countries that was treated with growth hormones, and the high degree of consumer efforts to block imports into Europe of foods produced with biotechnology.

farmers may not be able to afford expensive chemical inputs during periods of depressed world prices.

- Although these economic benefits may exist, little detailed, quantitative cost-benefit analysis of the economic costs and benefits of shade-grown coffee has been undertaken. One recommendation of this study is that follow-up work concentrate, *inter alia*, on estimating the economic, investment and income distribution effects of shade-grown coffee compared to other types of production, as well as assessing the environmental benefits of such low impact, shade coffee production methods.

The Implications and Opportunities for Mexico

1) International Market Opportunities

Mexico is the world leader in the production of organic and shade-grown coffee, with approximately 20.5 percent of the total world market of organic-grown coffee.⁵ By capitalizing on consumer trends, Mexico has the opportunity to increase its share of coffee exports, improve its international reputation as a producer and exporter of quality coffee, and in the process help safeguard its environment. World coffee markets have often regarded Mexican coffee as being of poor or inconsistent quality. Part of this perception is due to the perceived absence of large-scale investment in modern, intensive coffee production methods, which include the intensive use of hybrid coffees, which can be grown directly in the sun. In turn, modern coffee production usually means a reliance on pesticides and other agrochemicals, the clearing of rainforests or other forested land, the introduction of mono-cultures and the funneling of large-scale capital investment, usually well-beyond the capacities of local communities.

Yet this report suggests clearly that it is precisely the attributes of Mexican coffee production—predominately shade-grown as well as organic, characterized by their reliance on standing forests for shade canopies, using little or no chemical additives, and owned by small landowners or communities—that together present Mexico with an important marketing opportunity to bolster its share in world coffee markets.

Several key questions remain—two of which are of central interest: First, what is the relationship between organic and shade-grown coffee in practice in Mexican coffee production, and how can these two cultivation techniques—which are not identical—be linked in promoting the concept of quality coffee? And two, what is the role of coffee certification bodies in assuring consumers that product claims are true?

2) Environmental Protection Opportunities

It is worth emphasizing that the objective of this study is not in itself the promotion of individual products such as Mexican shade-grown coffee. Promoting shade-grown coffee is a means to an end, rather than the end itself. The end goal is environmental protection and sustainable development. To that end, the purpose of this study is to deepen the understanding in a focused, quantitative way of the potential “win-win” strategies that may exist between environmental protection and the promotion of environmentally-preferable shade coffee production.

Mexico possesses some of the world’s most important biodiversity habitats, including the Lacandón rainforest, the largest remaining tropical forest in North America. Mexico is also the world’s leading producer of organic coffee, and among the world’s leading producers of shade-grown coffee. This study helps assess one aspect of the “win-win” strategies related to coffees: the extent of consumer interest in shade-grown coffee. It does not address the question of the extent to which shade-grown coffee can yield environmental benefits, and what criteria needs to be adhered to in ensuring ecosystem integrity. This second part of the strategy—criteria related to production—is

⁵ Other countries, including Costa Rica, Guatemala, the Dominican Republic, Haiti, Peru, Nicaragua, Brazil and Colombia, together account for 60 percent of world organic exports of coffee (UNCTAD 1996).

being addressed by the CEC in its partnership with the Smithsonian Migratory Bird Center (see Annex 2).

Once these two aspects of the “win-win” strategy are examined—that is, the production and consumption sides—the CEC will release a synthesis report as a background for a conference on shade-grown coffee, to be held in late October or early November in Mexico. The purpose of this conference is to draw together different stakeholders from the shade coffee enterprise—small-scale producers, distributors, retailers, the environmental and scientific communities, marketing, finance and other specialists—to help identify practical strategies to understand and exploit “win-win” relationships in the billion dollar international coffee market.

III. Selected International Coffee Markets: A Brief Overview

In many coffee consumer countries, coffee markets are characterized by oligopolistic market structures. For instance, in the United States, 70 percent of the total coffee market is controlled by three companies—Phillip Morris, Procter and Gamble, and Nestlé.

United States: The United States is the single largest coffee market in the world: in 1997, the United States imported almost 19 million bags (60 kg) of coffee. In 1998, this amount increased slightly. Green bean imports to the US from Mexico rank third among US coffee imports, at 13 percent of the US total, after Colombia (18 percent) and Brazil (14 percent). According to data from the *Secretaría de Agricultura, Ganadería y Desarrollo Rural* (Sagar), the United States also represents the largest export destination for Mexican coffee producers: 84 percent of total Mexican exports are sold to the United States (Sagar/*Consejo Mexicano del Café* 1996).

Within the United States, the specialty coffee market represents the fastest growing market segment: estimates suggest that specialty coffees now represent 30 percent of total coffee demand. This figure is significantly higher than specialty coffee segments in Canada or Europe. One barometer of the growth of the specialty coffee market in the United States is the explosion of gourmet coffeehouses. In 1991, approximately 500 gourmet coffeehouses existed in the United States. In 1998, that figure had shot up to approximately 7,000. The US National Coffee Association predicts that that number will increase to 10,000 by the year 2,000. Interestingly, per capita consumption of coffee in the United States has hovered around 4 kg (green bean) from 1994 to 1998 (FAS/USDA), suggesting that consumers, while not buying larger volumes of coffee, are increasingly shifting toward gourmet and specialty coffees.

Canada: Canada imports approximately two million bags of coffee per year. By weight, this amounted to 115.7 million kg of green coffee in 1996 (Coffee Association of Canada). Mexico ranks as the sixth largest exporter of coffee to Canada, representing 6 percent of the market (1995), behind Colombia, Brazil, Guatemala, El Salvador and Peru. Coffee is the most popular beverage sold in Canada, being drunk at an average annual rate of 4 kg per capita of green bean coffee (Waridel 1997). The bulk of the Canadian coffee market—approximately 75 percent—is roast and ground coffee, followed by 24 percent for instant coffee and 4 percent for specialty coffee.

The structure of the Canadian coffee market mirrors the world market: it is controlled by Phillip Morris, Sara Lee, Procter and Gamble, and Nestlé. In addition, A. L. Van Houtte is a major coffee chain and roasted coffee supplier to supermarkets in Quebec and Eastern Canada, while the gourmet coffeehouse chain Second Cup (owned by Cara) rivals Starbucks in this market segment. Another important part of the Canadian coffee market are donut chains like Tim Hortons and Dunkin’ Donuts: in all, there are 5,464 specialty coffee restaurants—including donut shops—in Canada, compared to approximately 17,000 in the United States.

Mexico: Estimates suggest that coffee consumption in Mexico is significantly lower than in either Canada or the United States, at approximately one million bags of coffee, or 0.65 kg per capita of green coffee (*Consejo Mexicano del Café* 1995). Most of Mexico’s coffee consumption—approximately 83 percent—takes place at home, and one company, Nestlé, dominates the coffee market. There are isolated examples of efforts undertaken by coffee producing

organizations of Mexico to offer consumers high-quality coffees grown in Mexico. These include Cafes la Silva by the Union de la Selva in Mexico City and San Cristóbal, CAFÉ CAFÉ DIRECT of CEPCO (Coordinadora Estatal de Productores de Café de Oaxaca) in Oaxaca City, and CAFÉ MUSEO CAFÉ by COOPCAFE (Coordinadora de Pequeña Productores de Café de Chiapas) in San Cristóbal de las Casas. However, in the vast majority of restaurants and tourist resorts Colombian coffee is served (Courville 1999).

Europe: Together, Europe represents a major coffee consuming region. Total imports of green coffee into all of Europe—that is Western, Central and Eastern Europe—in 1997 were almost 45 million bags (Courville 1999). However, the vast majority of the European market—over 80 percent—is in Western Europe. It is worth noting that a strong product differentiation does not exist in Western Europe between specialty, high-quality coffee and supermarket coffee, for the simple reason that supermarket coffee has consistently been of a much higher quality in Europe than in Canada and the United States. The best-selling coffees are reasonable quality blends, while the percentage of lower quality coffee (that is, Robustas and Brazilian Milds) which are used in blends varies at any given time, depending on market prices.

Germany is the largest single importer of coffee in Europe, with 13 million bags. After the United States, more coffee is roasted in Germany than in any other consumer country: in 1997, Germany exported approximately 1.5 million bags of roasted coffee. The percentage of European coffee imported from Mexico varies by country but, in general, Mexico is not a major coffee source. In Austria, Mexican coffee ranks tenth, with less than one percent of total supply. In France, approximately three percent of total coffee is Mexican, while in the Netherlands and the Nordic countries, Mexico ranked around seventh, with three percent of total imports (Courville 1999).

Although these figures are low, of interest to this study is the much higher percentage of total imports into western Europe which fall in the category of “Other Milds”—the category of coffee applied by the International Coffee Organization to Mexican coffee. For example, 35 percent of German coffee, 42 percent of Swiss coffee, and 25 percent of coffee imports to the Netherlands fall in the category of “Other Milds.” Accordingly, this market segment, and these countries, could be the target of Mexican exporters, given the high acceptance of “Other Milds” and medium roast coffees.

IV. Survey Results

Background Data on Consumer Demand for Coffee

In order to undertake the telephone surveys, the following consumer information was compiled regarding how much coffee is purchased, where and by whom. This background information provides marketing information about coffee markets in the three countries.

1) Incidence of regularly drinking hot brewed coffee

In Canada and the United States, hot brewed coffee is drunk regularly by approximately 50 percent of adults surveyed in Canada, and 48 percent of those in the United States. In Mexico City, coffee is slightly less popular, with 44 percent of the adults sampled indicating they consume coffee regularly.

2) Incidence of regularly drinking instant coffee

Patterns of instant coffee consumption vary significantly among the three countries. In Mexico, nearly two-thirds of adults—63 percent—indicated that they drink instant coffee regularly. By contrast, instant coffee in Canada is consumed by 28 percent of the adult population, while in the United States, the popularity of instant coffee is significantly lower, with approximately 13 percent of the adults surveyed drinking it regularly.

3) Where coffee is consumed

In all three countries, coffee is most likely to be consumed at home. In Mexico, nearly everyone who drinks coffee drinks it at home—approximately 97 percent of coffee drinkers. In the United States, 93 percent of those adults who consume coffee do so at home; in Canada the figure is 82 percent.

Half the adults in Canada and the United States drink coffee at work (51 and 54 percent, respectively, of those sampled) or at restaurants that do not offer branded choices (50 and 54 percent respectively). Coffee consumption for both places is significantly lower in Mexico, at 30 percent for work and 17 percent for restaurants.

Coffee drinking at social functions is highest in the United States, at 50 percent, compared to 39 percent for Canada and 41 percent for Mexico. Roughly 40 percent of adults in the United States and Canada consume coffee at coffee bars or restaurants. In Mexico, this portion drops to approximately 30 percent.

4) Types of coffee consumed: Caffeinated versus decaffeinated

Caffeinated coffee is the choice of a wide majority of adults in all three countries. By contrast, 6 percent of coffee drinkers in Canada use decaffeinated coffee. Caffeinated coffee is consumed by over three-quarters of those who drink coffee in Mexico, and approximately 89 percent in the United States.

5) Amount of coffee consumed

In the United States and Canada, coffee drinkers on average consume three cups per day (22.4 cups per week in the United States; 19.3 cups in Canada). In Mexico, coffee consumption among coffee drinkers is approximately 10 cups per week. In the United States, over one-fifth of the coffee drinkers (22 percent) consume more than the average three cups per day.

6) Amount of coffee purchased for home consumption

Adults in the United States purchase the most coffee for household consumption in a typical month (3.3 lbs.). Canadian coffee drinkers (who are least likely of all three countries examined to drink coffee at home) purchase, on average, about half the amount of their American counterparts (1.5 lbs.). Mexican coffee drinkers (who almost universally drink coffee at home, if they drink it at all) purchase about two pounds in a typical month.

7) Types of coffee purchased for home consumption

In the United States and Canada, over three-fourths of the coffee drinkers choose ground coffee (79 percent and 76 percent respectively). Whole coffee beans are preferred by about one out of five drinkers (22 percent and 20 percent). In contrast, Mexican coffee drinkers are more likely to choose instant coffee (63 percent) than any other type.

8) Primary decision maker

In both countries where this question was asked (United States and Mexico), a majority of the coffee drinkers interviewed (51 percent and 59 percent respectively) said they alone were responsible for the coffee purchased for their household. Approximately one-quarter more said they share the decision with another household member. Primary decision-makers in both countries are more likely to be females: in the United States, 72 percent of the women interviewed said they alone were responsible for the coffee chosen for the household. In Mexico, the proportion was almost as high, at 67 percent.

Key Findings and Analysis of the Public Opinion Survey and Taste Tests

In Canada, Mexico and the United States, samples were almost equally split regarding which one of two concepts for shade-grown coffee was read to individuals who were surveyed:

1. Shade-grown coffee is grown more slowly, at higher elevations, by small growers who achieve quality and consistency without heavy chemical use. Shade-grown coffee offers natural taste and unique flavor without the use of heavy pesticides of large-scale coffee-growing operations.
2. Shade-grown coffee is grown at higher elevations, under the tropical rainforest canopy (known as “canopy-grown” coffee), giving the coffee a unique flavor and taste while also protecting important bird habitats and preserving the fragile mountain soil.

For purposes of reporting, the first description will be referred to as “Slow-grown, No Heavy Chemical Use” and the second description will be referred to as “Canopy-grown, Environmentally Protective.”

1) Consumer Interest in Shade-grown Coffee: Comparing Concepts

- What is clear from the surveys is that descriptors linking shade coffee to a “natural taste and coffee high in quality and consistency” are by far the most important element in any marketing scheme. That is, consumers will not buy a poor quality coffee product because it is good for the environment, for social justice or for bird conservation. This study reaffirms other findings—that quality and taste must be the main message in any marketing campaign.
- This study shows that a coffee concept is a highly significant variable for retailers. When interpreted with the correlation part of this study, it appears that there is a significant relationship between a coffee concept and the retailer’s decision to carry the product. By contrast, pricing, sales and prior product variables appear to have no effect on retailer decisions.
- Interest and, consequently, estimated trial proportions were at least marginally higher for a shade-coffee that is “grown slower by small growers who achieve quality and consistency without heavy chemical use” than one that is described with fewer taste descriptors and more of a promise of “environmental protection.”
- Both concepts note that shade-grown coffee is grown at higher elevations, contributing to a unique taste. The survey suggests that because it is grown at higher elevations, consumers may be most familiar with the descriptor “mountain-grown coffee” than its association with shade-grown coffee. This does not exclude the descriptor “shade-grown,” although the surveys note that consumers are less familiar with the taste benefits of this descriptor.
- The survey also examines what consumers mean by quality. Coffee quality is assessed by coffee tasting experts by its aroma, body and acidity. Mexican coffee is not considered to rank among the best coffees in the world by coffee experts. The survey results show that most consumers are either unaware of the quality of Mexican coffee, or if they do have an opinion, it is likely to be negative. Among the key findings of this study is that any marketing and promotional campaign which is launched must use consistent and high quality shade-grown coffees, and must emphasize the taste and superior quality benefits of Mexican shade-grown coffee.
- This study suggests different responses to the taste and perceived quality of Mexican shade-grown coffee: the taste results of focus groups conducted by Sustainable Harvest suggested a neutral or negative response to shade coffee from the Pluma Hidalgo region of Oaxaca. (This response may be explained by the poor quality of coffee from that region due to the effects of the Hurricane Paulina of 1997 and the six-month draught of 1998.) By contrast, results of the Montreal focus group taste tests (December 1998) found that 80 percent of those tested ranked Mexican shade-grown coffee as “very good, good or OK.” Mexican shade-grown coffee received the highest ranking in the Canadian taste test, with 46 percent of respondents rating it as “very good” over coffee from Costa Rica, French roast, Guatemalan coffee and a local blend (A.L. Van Houtte). Only seven percent of respondents ranked Mexican shade-grown coffee as weak, and 14 percent found the coffee to be watery. (By contrast, 52 percent of the Canadian respondents found French roast to be watery, and 41 percent found this type to be weak.). Moreover, the Canadian focus group found that Mexican shade coffee showed a greater taste consistency and was judged by respondents as possessing the most favorable taste descriptor (the terms used were smoothness, richness and aroma).
- Although the Canadian focus group suggests that consumers prefer Mexican shade-grown coffee to other blends, the results of the US focus groups found that shade-grown coffee was judged as

having either comparable taste quality to sun-grown coffee, or quality marginally below sun-grown coffee. Generally, groups found shade-grown coffee to be no better or no worse than sun coffees. Such findings conform to results of coffee tasting experts employed by exporters and importers, as well as roasters, in Mexico, the United States, Germany, Spain and Denmark, which found no difference in taste between shade- and sun-grown coffee.

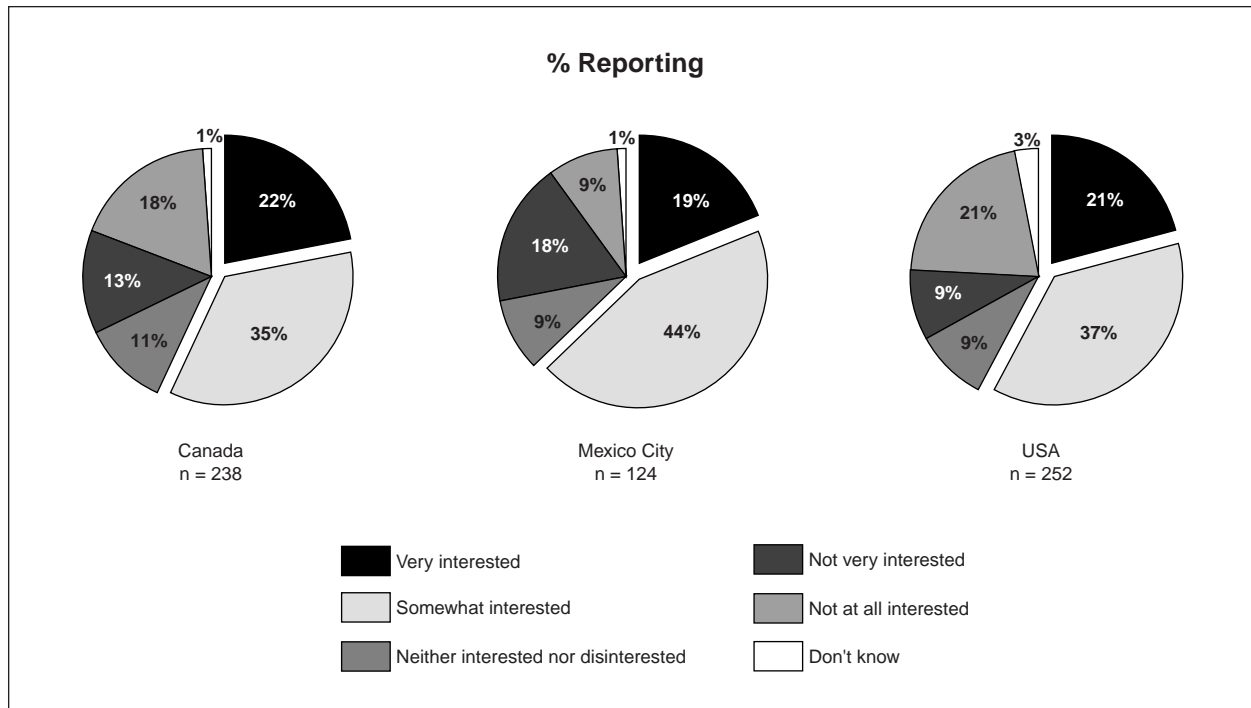
- The international view about the taste of shade-grown coffee is, not surprisingly, mixed: while many coffee-tasting experts perceive no difference in taste, some argue that the over-hybridizing of coffee plants is eroding taste quality. Many experts also note that traditional varieties of Typica and Bourbon are best grown in shady conditions because of superior soil, and more favorable micro-climate and altitude conditions.
- To reiterate, the above taste test findings suggest several points: (a) Mexican shade-grown coffee can compete with gourmet coffees on taste, but its performance is not consistent. Therefore, any promotional campaign of Mexican shade-grown coffee must use consistent and high-quality coffees; (b) survey results show that consumers are interested in shade-grown coffee, if the main marketing message is quality and taste; and (c) the most effective marketing campaign is one in which superior taste can be linked to relatively beneficial health effects.

Concept One: Slow-grown, No Heavy Chemical Use

The figure below shows the results of the following question read to survey participants regarding Concept One.

Shade-grown coffee is coffee that is grown slower, at higher elevations, by small growers who achieve quality and consistency without heavy chemicals. Shade-grown coffee offers natural taste and unique flavor without the use of heavy pesticides of large-scale coffee-growing operations. Based on this description, would you be very interested, somewhat interested, neither interested nor disinterested, not very interested or not at all interested in purchasing shade-grown coffee?

Figure 1. Interest in shade-grown coffee: Slow-grown, no heavy chemical use



- Almost one-in-five coffee drinkers surveyed in North America expressed a “strong interest” in shade-grown coffee. Despite differences in purchasing and consumption behavior among the three countries, receptivity to shade-grown coffee and an interest in linking taste and

environmental benefits was remarkably similar among Canadian, Mexican and US consumers. Specifically, the survey showed that in Canada, 22 percent of those polled, in Mexico, 19 percent, and in the United States, 21 percent, were “very interested in purchasing” shade-grown coffee.

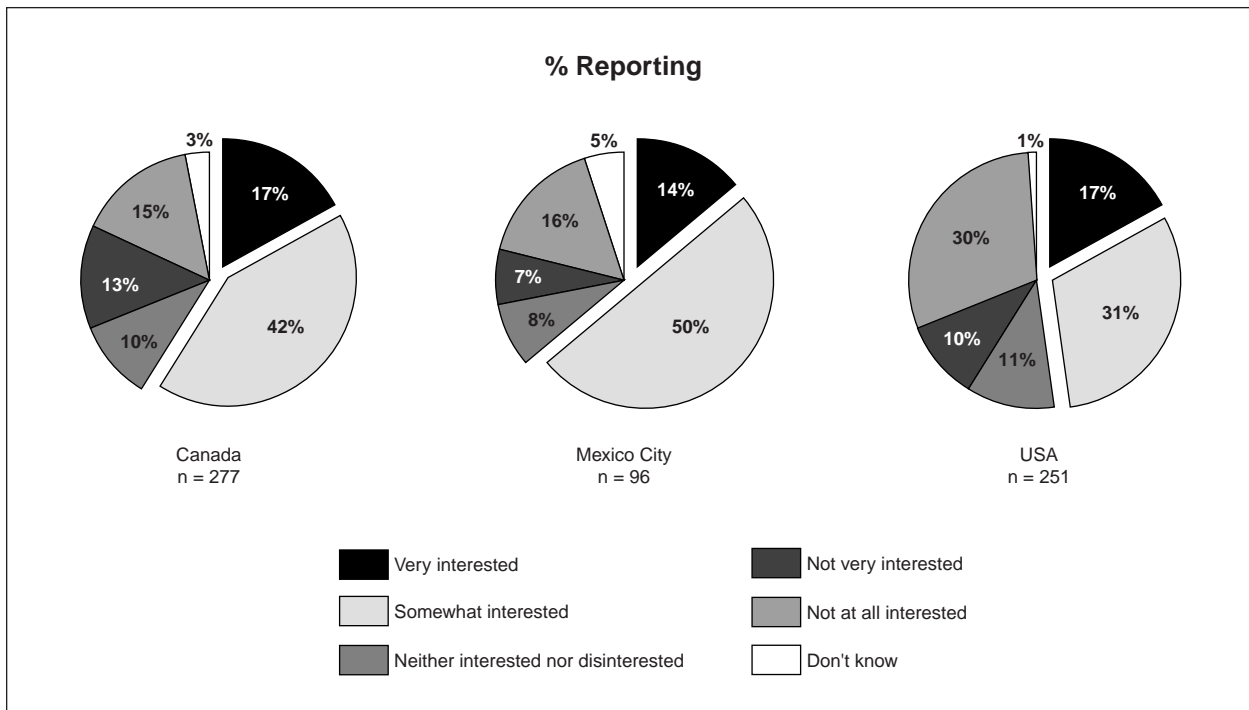
- Moreover, the survey showed that a majority of coffee consumers in all three countries—57 percent in Canada, 63 percent in Mexico and 58 percent in the United States—expressed at least “some interest in purchasing” this type of coffee.
- Disinterest—as measured by the proportion who were “not at all interested in purchasing” this coffee—was highest in the United States, at 21 percent.

Concept Two: Canopy-grown, Environmentally Protective

The figure shows the results of the following question read to survey participants regarding Concept Two.

Shade-grown coffee is coffee that is grown at higher elevations, under the tropical rainforest canopy, giving the coffee a unique flavor and taste while also protecting important bird habitats and preserving the fragile mountain soil. Based on this description, would you be very interested, somewhat interested, neither interested nor disinterested, not very interested or not at all interested in purchasing shade-grown coffee?

Figure 2. Interest in shade-grown coffee: Canopy-grown, environmentally protective



- Reactions among approximately half the sampled population in each of the three countries to whom this concept was presented was somewhat less positive than for the concept describing shade-grown coffee as “slow-grown with a natural taste and no heavy chemicals.” Nevertheless, approximately 17 percent of coffee drinkers in the United States, 17 percent in Canada, and 14 percent in Mexico were “very interested in purchasing” this type of shade-grown coffee.
- A majority of coffee consumers in both Canada and Mexico—59 percent in Canada and 64 percent in Mexico—expressed at least “some interest in purchasing” this type of coffee— fairly similar to the results noted above for the previous concept. By comparison, coffee drinkers in the United States expressed less interest in a shade-grown coffee described as environmentally

protective—at 48 percent—than for the concept of “grown slower by small growers who achieve quality and consistency without heavy chemical use.”

- Not surprisingly, disinterest—as measured by the proportion who were “not at all interested in purchasing” this coffee—was also highest in the United States, at 30 percent, and considerably higher than voiced for the alternative wording (21 percent).

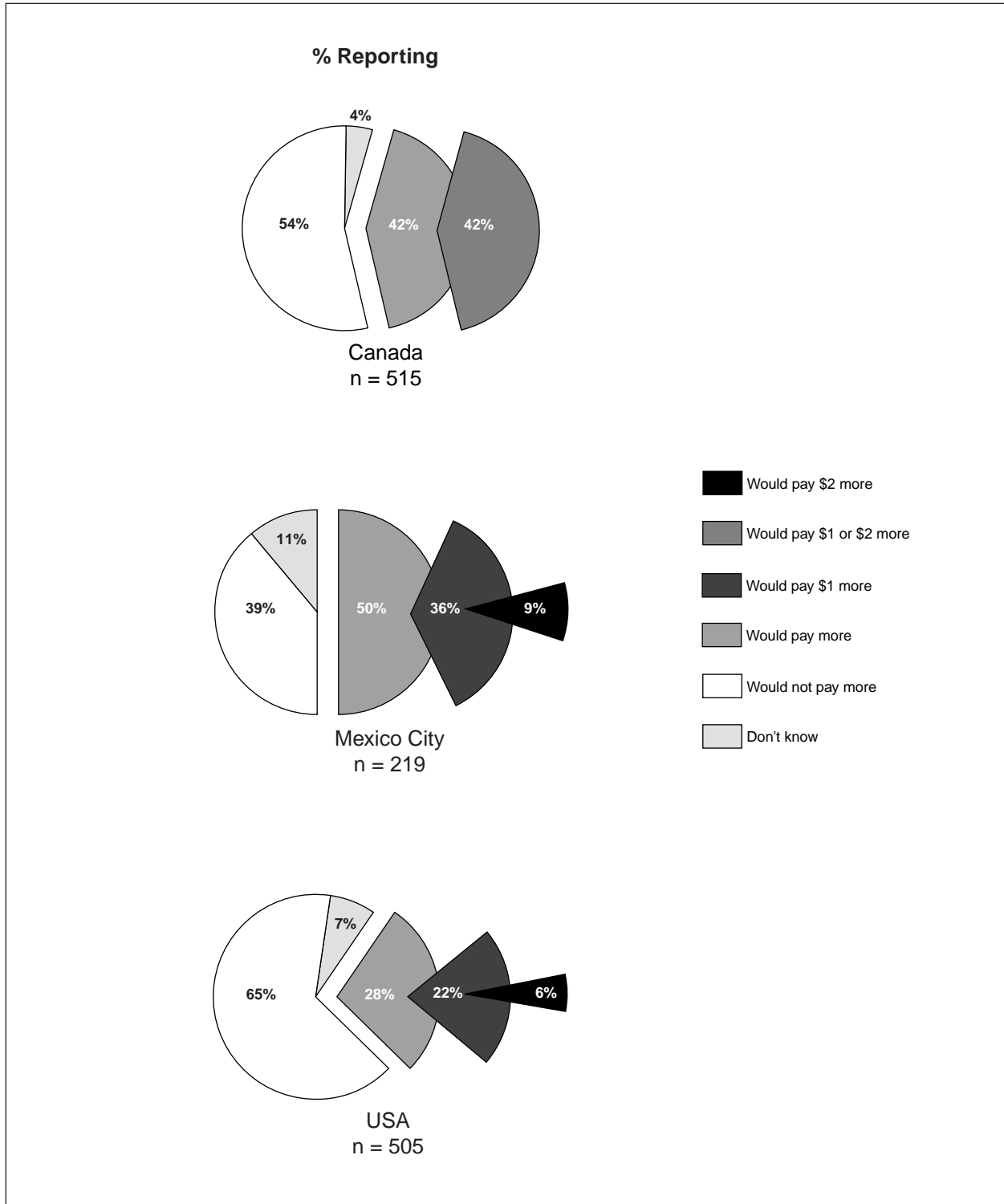
2) Familiarity with Mountain-grown and Shade-grown Coffee:

- The term, “mountain-grown,” is the only phrase a majority of coffee drinkers in the United States and Canada were familiar with. In the United States, this term is known to 91 percent of coffee drinkers, and in Canada by 76 percent. Least familiar of four phrases tested—that is, “mountain-grown,” “Arabica,” “organic” and “shade-grown”—in the United States and Canada was the term “shade-grown coffee.”
- By contrast, Mexican coffee drinkers are as familiar with “shade-grown coffee”—at 21 percent—as any of the other descriptors employed to describe types of coffee.

3) Willingness to Pay

The survey showed that US consumers were more sensitive to the issue of price than residents of Canada or Mexico City. That is, paying US\$1 more a pound for shade-grown coffee over other types of coffee would reduce consumer interest by approximately 50 percent in Mexico City and by almost 75 percent in the United States. Fewer than one in ten consumers surveyed in the United States and Mexico were willing to pay \$2 more per pound for shade-grown coffee (see Figure 3).

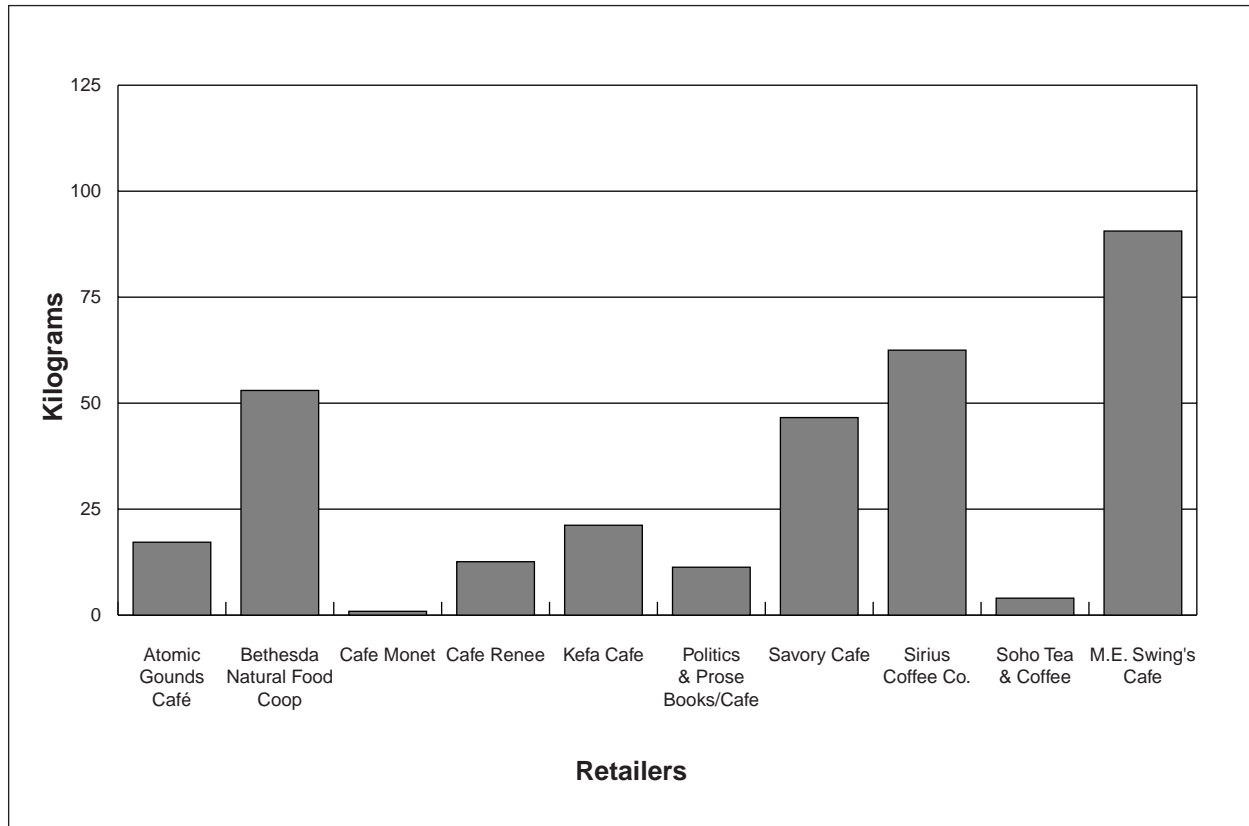
Figure 3. Willingness to pay \$1 or \$2 more for shade-grown coffee
 (Among those who regularly drink hot brewed coffee)



4) Marketing Approaches

- Results of the point-of-sales tests show that consumer and retailer perception of taste do not appear to be influenced by any the four marketing tools used in support of the point-of-sales portion of this study: that is, radio spots, print ads, point-of-sale materials and employee training.
- All four marketing programs have a positive relationship with the perceived consumer interest in the coffee concept. The radio spots were found to have the strongest positive relationship.
- There appears to be no significant relationship between the retailer's perception of point-of-sales material effectiveness and the retailer's perception of consumer interest in the coffee concept.
- From the Washington, DC, retailer or roaster's perspective, print ads, radio spots, and employee training have the greatest value proposition, having a high correlation with the consumer's interest in the product concept.
- Contrary to retailer expectations, point-of-sales materials seem to be a weak value proposition, having no significant correlation with retailer perception of their consumer interest in the concept;
- Promotions, especially publicity, seemed to motivate retail shoppers to higher volume purchases of shade-grown coffee. As a result, the sales of Mexican shade-grown coffee at the point-of-sales tests as a percentage of total sales were higher than expected. For example, while the national market for shade-grown coffee is US\$30 million, or roughly one percent of the gourmet coffee market (Griswold 1999, citing Sturdivant figures), results of the Washington-based point-of-sales studies showed purchases of shade-grown coffee at participating retailers averaged five percent. Figure 4 shows the quantities by weight sold by the participating retailers in the Washington studies.

Figure 4. Sales of Mexican shade-grown coffee by participating cafes



Marketing Implications and Considerations

- This study shows clearly that most consumers identify Colombian coffee with the best quality coffee. If Mexico is to consider a marketing campaign to promote the taste and other attributes of shade-grown coffee, then lessons from arguably the world’s most successful marketing campaign—Colombia’s Juan Valdez marketing concept—are useful. Juan Valdez was created by a New York advertising agency in 1981. Today, it is the second most recognized product logo anywhere in the world in terms of consumer awareness: for example, in the United States 56 percent of consumers associate the logo with Colombian coffee.
- The cost of this campaign is not available to the public; however, one indicator of its cost is that over a dozen ad agency staff service this account alone (Thurston 1997), and the likely advertising budget would be in the US\$100 million per year. For example, Douwe Egberts spends US\$21 million in the Netherlands alone for its media and promotional campaigns. When Kraft’s Jacob Suchard entered the Dutch market with its “Carte Noire” coffee product, it spent US\$11 million over two years, with mixed results.
- These figures suggest that the successful marketing of Mexican shade-grown coffee is very costly—far beyond the budget of the CEC—without any guarantees of results. Sustainable Harvest notes that approaches could include taking advantage of free media, engaging local and regional communities, as well as innovative roasters and retailers. In this regard, Sustainable Harvest notes that the recent announcement by Starbucks—the largest gourmet specialty coffeehouse in the United States—to undertake an initiative with several large conservation and consumer groups may be evidence of the growing market penetration of shade-grown coffee in the next few years.

5) Perceived Quality of Coffee from Different Countries of Origin

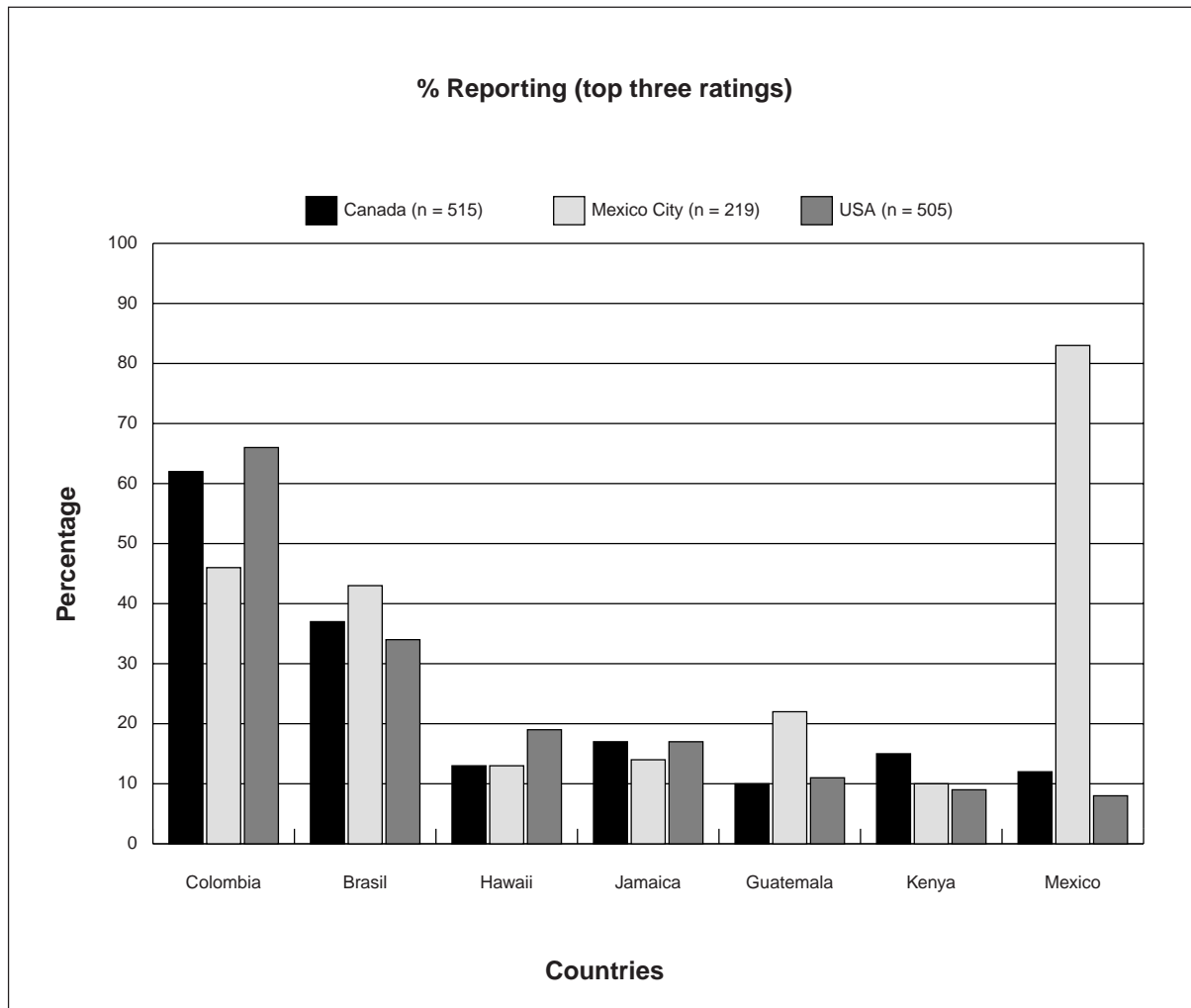
From Mexico

- Knowing that shade-grown coffee is cultivated in Mexico is more likely to have a neutral effect on the level of consumer interest, as opposed to either a positive or negative effect. Among those who said their interest was altered by knowing that shade-grown coffee was cultivated in Mexico, the effect was more positive than negative in Canada. In the United States, the reverse was true: that is, the surveys suggest that consumers may have a slightly negative impression of Mexican products generally, and little knowledge of Mexico as a coffee-producing country.
- In general, consumers from the United States and Canada were least familiar with coffees from Mexico and most likely to ascribe the highest quality ratings to coffees from Columbia.

From All Other Countries

- Regardless of their personal experience with coffees from different countries, coffee drinkers were asked to express their perceptions of quality for coffees from seven countries (see Figure 5). Clearly, among those who answered in the United States and Canada, Colombian coffee is judged superior. Brazilian coffee also ranks high in quality perceptions. Overall, African (Kenyan) and Mexican coffees are perceived as lower in quality in both countries.
- Not surprisingly, Mexicans have a different perspective on what coffees they believe are highest in quality: Mexican coffee ranks first, followed by Colombian and Brazilian coffees.
- An examination of the proportion of coffee drinkers who rate the quality of coffee from different countries near the top of the ten-point scale (rated an 8, 9, or 10) only serves to emphasize the difference in perceptions. That is because of the unfamiliarity of both Americans and Canadians with specific coffees—most notably, those from Mexico.
- For example, in the United States, only 16 percent were unable to judge the quality of Colombian coffee based on familiarity with coffee produced from that country. By contrast, 44 percent of US respondents were unable to rate the quality of Mexican coffee for the same reason. In Canada, a similar pattern was noted: 90 percent of respondents were familiar with Colombian coffee, while only 68 percent were familiar with Mexican coffee.

Figure 5. Ratings for quality of coffee grown in various countries
(Among those who regularly drink hot brewed coffee)



6) Consumer Access to Shade-grown Coffee

- This study found that coffee purchases are most likely to be made at supermarkets in all three countries—approximately three-quarters of total purchases. In the United States, mass merchandisers and warehouse clubs are a distant second (22 percent and 19 percent). In Canada, the second most likely place to find coffee shoppers is at specialty grocery stores (17 percent) and in Mexico, convenience stores rank second in popularity (9 percent).
- An obvious lesson from this result is that for the home consumption segment, coffee must be accessible. One of the recommendations from the Sustainable Harvest report is to “get large-scale distribution” for shade-grown coffee in supermarket outlets, citing the Hartman Environmental Report that suggests that one of the key reasons why consumers don’t buy environmental products is that they cannot find them on a regular basis (Griswold 1999).
- Accordingly, an important part of any marketing campaign is not only to raise consumer interest in shade-grown coffee, but also to ensure that it gains access to supermarkets. This is not an easy challenge. Traditionally, placing a product in a supermarket chain has been an extremely expensive exercise, requiring a large turnover and with companies paying facing or slotting costs. In addition, the biggest companies in supermarket competition are the same companies that control 70 percent of the world’s coffee market: Phillip Morris, Nestlé, Procter and Gamble and Sara Lee.

- Despite these challenges, recent changes in consumer views towards specialty and health food products are introducing changes in the way many supermarkets in North America are making product choices. In general, the pattern of how supermarkets handle health and specialty foods evolves according to the following four steps: (a) begin with a few specialty/health/organic products which are stocked on a regular basis; (b) introduce a special aisle for such products; (c) set up a clearly identified natural foods or “Foods of the World” section in the supermarket, and (d) introduce a health food/organic/specialty food supermarket where every product has a special claim.
- In the United States, the growth of large-scale, natural food supermarkets such as Whole Foods Market and Wild Oats/Alfalfa’s is one example of this fourth stage. Whole Foods growth has been phenomenal, with a 1108 percent increase in sales from 1991 to 1997.
- Accordingly, there are new opportunities for suppliers of Mexican shade-grown coffee to exploit changes in how product supplies are handled in supermarkets.

V. Summary

- The survey results, coupled with other studies compiled for this report, suggest that the target market for Mexican shade-grown coffee should be the United States and Canada, followed by Denmark, Sweden, Finland and Norway.
- In identifying target markets, the study found that the most effective marketing approach would be to link shade-grown coffee with quality and taste. This is the approach developed by Sustainable Harvest, as found in its consumer education and marketing information developed for point-of-sales analysis: “Shade-grown coffee grows at high altitudes under protective cover that allows the sugars to develop more slowly, resulting in a sweeter tasting, richer cup of coffee.” The study also found that aside from linking shade-grown coffee with taste and product quality, other attributes—such as health and environmental benefits—can be important in targeting specific consumer groups or in gaining access to distribution channels.
- The omnibus survey shows that least receptive of the three countries to the benefits of linking environmental protection to coffee purchases was the United States. Consumer segments with highest interest in the United States included heavy purchasers of coffee and those who prefer “whole beans.” In the United States, interest also tended to increase as household income increased. One demographic target where interest tended to peak was the group of consumers between 30 and 45 years of age, where interest levels in all countries were at least somewhat elevated.
- The surveys showed that there is potential consumer interest in shade coffee as a concept: 22 percent of those contacted in Canada, 19 percent in Mexico, and 21 percent in the United States—were “very interested in purchasing” Mexican shade-grown coffee (Delaney Research 1999). Moreover, a majority of consumers in all three countries—67 percent in Canada, 63 percent in Mexico and 58 percent in the United States—expressed at least “some interest in purchasing shade-grown Mexican coffee” (ibid.).
- However, the public opinion surveys also showed that in addition to health and environmental benefits, pricing would play an instrumental role in the acceptance of shade-grown coffee. The survey showed that US consumers were more sensitive to the issue of price than residents of Canada or Mexico City. That is, paying US\$1 more a pound for shade-grown coffee over other types of coffee would reduce consumer interest by approximately 50 percent in Mexico City and by almost 75 percent in the United States. Fewer than one in ten consumers surveyed in the United States and Mexico were willing to pay \$2 more per pound for shade-grown coffee. Among the possible interpretations of these results is that US consumers may be more price-sensitive to coffee because they purchase considerably more of it in an average month than Canadians or Mexicans and also because they are used to inexpensive coffee prices.
- The survey results suggest that among specialty coffee drinkers there is some willingness to pay a price premium for Mexican shade-grown coffee. The retail price will vary from country to

country, with consumers in Canada and the United States prepared to pay more for shade coffee than consumers in Europe. However, apart from what consumers are willing to pay for shade-grown coffee is the question of how much importers and roasters are willing to pay for Mexican shade-grown coffee. This is a more difficult question, given structural rigidities that characterize world coffee markets.

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Annex 1: Objectives and Methodology

Objectives and Areas of Interest of Market Surveys

The first part of the study set out to measure the coffee drinking and coffee-purchasing behavior of the general adult population and reactions to the potential availability of Mexican shade-grown coffee in Canadian, Mexican and US supermarkets, specialty gourmet coffee houses and other outlets. Among the considerations of this assessment were the following factors:

- Incidence of drinking hot brewed coffee on a regular basis
- Where coffee is usually drunk
- How much coffee is usually drunk in a average week
- What proportion of coffee drunk is regular vs. decaffeinated
- How much coffee is usually purchased for the household in a typical month
- Perceptions of coffee quality from various countries (including Mexico)
- Familiarity with specific terms used to describe coffee (e.g., organic, shade-grown, etc.)
- Interest in Mexican shade-grown coffee based on reactions to one of two selling concepts
- Willingness to pay more for Mexican shade-grown coffee
- Effect on interest knowing coffee is grown in Mexico
- Examining interest among specific segments of each population

Surveys in the United States were conducted by Bruskin/Goldring Research, utilizing their Omnitel survey technique. The survey is based on a random digit dialing (RDD) probability sample of all telephone households in the continental United States. The system is totally computer based and provides an equal opportunity of selection for all (both listed and non-listed numbers) telephone households. Professionally trained interviewers utilize CATI (computer-assisted telephone interviewing) technology. The effort yielded 1,015 completed interviews, 482 of which were with male adults and 533 with female adults. Collected data are weighted (by age, gender, education, race and geographic region) to reflect an accurate and reliable representation of the total population, 18 and over. All data for the United States were collected on 2–6 December 1998.

For the Canadian survey, Thompson, Lightstone & Company, Ltd., was engaged. This firm also uses CATI services from centrally located dialing facilities in Toronto and Montreal. The sample itself is generated from a database of all Canadian telephone numbers (the final digits of telephone numbers, however, are randomized to ensure full coverage of all Canadian households). Collected data are weighted to replicate actual population distribution by gender and age within region (Yukon and Northwest Territories are excluded). All data for Canada were collected between 10–15 December 1998.

The survey by Metropolitan is representative of Mexico City residents and was conducted in early December of 1998.

Data tabulations were sent to the CEC and to an independent research company, Delaney Research, for analysis.

A Word about Statistical Testing

Statistical differences throughout this report are indicated at the .05 level of significance (two-tailed test).

In essence, the 0.05 level means there is a probability that one out of twenty (5 percent) findings that are reported as significant are, in fact, not significant—or that findings that are not reported as significant are, in fact, significant.

“Two-tailed” indicates that we were interested in determining if a particular number was higher or lower than another statistic.

Reporting from each subgroup or each country was compared to the group average (accounting for the proportion of the group average each subgroup represented).

Base sizes illustrated throughout this report are unweighted statistics based on sample parameters.

Structural Selling Propositions

An examination of how shade coffee is described to potential prospects shows that both concepts include that the coffee is grown at high elevations (perhaps suggesting or associating a term which consumers are familiar with, “mountain-grown”) and both promise a unique taste.

Concept B would seem to derive its unique flavor from the fact that it is grown in the shade (under a tropical rainforest)—which also has the added benefit of protecting the environment. The promise of a unique taste in Concept A is identified as natural, high in quality and consistency because it is grown slowly, by small growers without heavy chemical use.

Segment Interest

Shade-grown, Slow-grown, No Heavy Chemical Use

In the United States, interest in a shade-grown coffee with heightened taste benefits increases as income increases. It is also well received by 31–49-year-olds.

Among coffee drinking segments, very high levels of interest are apparent among whole bean users and heavier purchasers. While the coffee was not identified as being from Mexico (when interest was first obtained), receptivity to the concept coincides with receptivity to the idea that the coffee might come from Mexico.

Canopy-grown, Environmentally Protective

As with the first concept, receptivity to a shade-grown coffee offering environmental benefits tends to increase as household income rises and is more popular an idea to heavy coffee drinkers as well as those receptive to the idea that the coffee may come from Mexico. The levels of interest among all these peak groups is, however, at least marginally lower than those attained by the concept which focuses more on taste.

Shade-grown, Slow-grown, No Heavy Chemical Use

In Canada as in the United States, there is a higher interest in the concept with emphasized taste benefits among 30–49-year-olds. There is also a higher interest among single people, and women, in particular, seem very interested in the idea.

The relationship of interest versus household income is less skewed in Canada than in the United States.

Canopy-grown, Environmentally Protective

In Canada, interest in a coffee that can provide environmental benefits increases as education levels rise. This concept is also better received by English speaking residents. As with the other concept, interest levels are also higher among 30–49-year-olds and single people.

Shade-grown, Slow-grown, No Heavy Chemical Use

In Mexico, the highest appeal of shade-grown coffee, with emphasized taste benefits, is among residents with a classified social status of A or B. Interest also tends to be higher among 35–44-year-olds.

Canopy-grown, Environmentally Protective

In Mexico, interest in a concept of a shade-grown coffee that also provides environmental benefits is relatively uniform among most segments. As with the first concept, interest is highest with those classified with an A or B social status. Interest among 25–34-year-olds is low relative to other segments.

Trial Estimates among Coffee Drinkers

United States

Interest in shade-grown coffee with emphasized taste benefits is significantly more appealing to coffee aficionados (heavy purchasers and whole bean users). Based both on incidence of coffee consumption and also on the expressed interest in each concept, trial estimates among consumers aware of shade-grown coffee are at least marginally higher when taste, not environmental benefits are emphasized.

Canada

While trial estimates in Canada are somewhat lower than in the United States, a pattern of preferences for the concept with heightened taste benefits is noted among women and single people. As in the United States, taste is a more important parameter than environmental benefits.

Mexico

Overall, trial estimates in Mexico were comparable to those seen in the United States, although financial returns in Mexico would be considerably less, due to not only population estimates but coffee consumption patterns. As in the United States and Canada, a concept emphasizing taste benefits instead of environmental protection engenders marginally more potential triers among most segments.

Willingness to Pay More

Both Canadians (42 percent) and Mexicans (50 percent) are more willing to pay more for shade-grown coffee than Americans (28 percent). (Note: In the case of Canadians, they were asked a modified version of this question: willingness to pay \$1 or \$2 more).

United States

Willingness to pay \$1 more per pound for shade-grown coffee in the United States was agreed to by fewer than one-quarter of the coffee drinkers interviewed (22 percent). When asked if they would pay \$2 more per pound, this proportion shrank sharply to only 6 percent.

Canada

In Canada, about four out of ten (42 percent) agreed they would pay "\$1 or \$2" more.

Mexico

In Mexico, the effect of price increases was more in line with coffee drinkers from the United States. While 50 percent said they would pay (somewhat) more for shade-grown coffee, only 36 percent said they would pay \$1 more and only one in ten (9 percent) would pay US \$2 more.

Receptivity to Mexican Shade-grown Coffee

When informed that the shade-grown coffee discussed was cultivated in Mexico, coffee drinkers in both the United States and Canada were most likely to say it had no effect on their interest (43 percent in both countries). Among the remaining coffee drinkers in Canada, this knowledge had more of a positive than negative effect (33 percent had increased interest, 22 percent had decreased interest). Among those in the United States, this knowledge was more harmful than helpful (22 percent increased interest, 28 percent decreased interest).

Annex 2: Excerpts from “Defining Shade Coffee with Biophysical Criteria”

Results of the Workshop Organized by
The Smithsonian Migratory Bird Center
of The National Zoological Park
Washington, DC 20008

and held at the
Jardín Botánico of the
Instituto de Ecología
in Xalapa, Veracruz, Mexico
8–10 February 1999

**Based on a project funded by the Commission for Environmental Cooperation,
Montreal, Quebec, Canada**

Submitted 18 June 1999

Defining Shade Coffee as a Sustainable Development Activity for Mexico

Introduction

In accordance with the Commission for Environmental Cooperation's (CEC) goal of contributing to the conservation of birds of North America (particularly non-waterfowl species), this project examined—via a three-day workshop—the manner in which shade coffee systems can contribute to the conservation of biodiversity, as well as to the broader goal of environmental protection in Mexico. With forest lands suffering ever-increasing pressure from commercial and subsistence forces, an exploration of how such managed lands might contribute to conservation provides planners and policy makers with data that can inform decisions not only about biodiversity maintenance, but of community development as well.

Coffee represents a commodity of great economic, social and environmental importance to Mexico. Ranking fifth in world production, Mexico cultivates more than 760,000 hectares of coffee, managed by 282,500 growers—most of whom are small peasant producers in remote areas. Twelve Mexican states contribute to the national production, where some 3 million people in more than 4500 communities scattered across 400 *municipios* participate in coffee's cultivation and harvest each year. About 85% of the annual production is exported, making coffee an important generator of foreign exchange. The states of Chiapas, Oaxaca and Veracruz stand out as major centers of production, accounting for 30%, 23% and 20%, respectively of the national area. Other states with significant areas of coffee lands include Puebla, Guerrero, Hidalgo, San Luis Potosí and Nayarit, each of which alone accounts for less than 10% of the national coffee area.

This project developed a set of definitions for “shade coffee” for the Mexican context. The mechanism for producing these definitions involved a workshop in which scientifically based information relative to shade coffee was presented and discussed by researchers involved in diverse studies related to coffee. A total of 14 researchers gathered in Xalapa, Veracruz, for three days in February of 1999 (8–10) to share information on their respective research efforts, review existing criteria related to “environmental” coffee, and contribute to the defining of a shade coffee for Mexico. Due to time constraints for most participants, the original plan to conduct site visits to coffee areas of Mexico did not occur. The unifying thread of the workshop was shade coffee. However, the goal of fitting shade coffee within the larger aim of sustainable development demanded that shade coffee parameters not be divorced from economic and social concerns of the coffee communities to which they apply. To this end, aside from science-based information related directly to coffee lands and their management, the workshop incorporated representatives from the coffee sector—especially those from small producer cooperatives involved in community development efforts around coffee production.

Background

The debate over shade levels in coffee is nothing new. From an agronomic perspective, the use and amount of shade has long occupied space within the production manuals of most coffee regions of the world. The concept of shade coffee as a habitat, however, does present new intellectual terrain. As an “artificial forest,” in essence, shade coffee provides many of the ecological services found in forested lands. Soil protection from erosive elements, organic matter production and incorporation into the soil, carbon sequestration, and habitat maintenance or enhancement are but a few of the kinds of services shade coffee can provide. Shade coffee is an important complement to natural forest protection not only in national environmental efforts, but regionally as well (e.g., the Meso-American Biological Corridor).

The principal goal of any land manager is to make a living through manipulation of the land surface. However, given that land is going to be put to economic use, managing it in such a way that maximizes its environmental value certainly qualifies as a worthy goal. Scientific research has only recently begun to examine shade coffee as a habitat or refuge for biodiversity, with the bulk of the

work having concentrated on birds and insects. Marketers, meanwhile, have locked on to the concept in their zeal to capture market shares within what they perceive as a potentially lucrative niche market (environmentally friendly coffee products). Coffee as a means for protecting habitat has quickly emerged as a marketing tool within the specialty coffee community.

The current challenge rests with the fact that few science-based criteria are being used to define “shade coffee.” A number of industry players—grower organizations, importers, roasters, and retailers alike—employ the terms “shade grown” or “shade coffee” on their products, implying that the source of the product is a production system replete with all the benefits of a forest system. As the workshop participants confirmed, shade comes in many forms and its mere presence does not insure adequate habitat or biodiversity maintenance. Rather, shade displaying distinct characteristics is needed before appellations like “shade-grown” or “shade coffee” can be applied to the commodity itself.

At the country level, El Salvador recently launched a nationwide initiative to promote its coffee as “shade coffee.” This effort is funded by the Global Environment Facility (GEF) program, and satisfies the GEF project priority categories of biodiversity and climate change. Another GEF project involving shade coffee is that located in Chiapas, in the area around the *El Triunfo* protected area. The efforts of the project—defining shade coffee as a sustainable development activity—fit well with these initiatives and complement the ultimate long term goal¹ of helping to define an industry-wide set of standards as to what constitutes “shade coffee.”

The project

A small number of researchers and coffee sector specialists convened to present and discuss the current state of knowledge on shade coffee. The Xalapa workshop built upon discussions that had occurred in 1996/97 at the First Sustainable Coffee Congress in Washington, DC, which led to the development of criteria for “sustainable” coffee. These criteria, as well as guidelines that have been developed from a number of other specific initiatives, served to help orient the workshop discussion. Over the course of this three-day workshop and with the help of a facilitator familiar with the issues, the workshop participants discussed, established, recorded and discussed again the criteria they thought best defined shade coffee as a tool for sustainable development. Some of the participants were ecologists, some agronomists, some social scientists. All had been active in recent years in research related to shade coffee.

The workshop sought to examine shade coffee within the Mexican context and establish criteria that might ultimately be used in some sort of certification scheme at the national level. The focus was upon biological and physical criteria related to shade management. Emphasis on these “biophysical” criteria in no way presumes that social, economic or cultural issues related to shade coffee are less important. In accordance with the charge from the Commission for Environmental Cooperation in Montreal, workshop time and energies concentrated upon the biophysical aspects of shade coffee that might best be used to position this concept as a tool for conservation, landscape ecology and sustainable development.

The results of the workshop—a set of definitions that can be applied to the concept of shade coffee as a sustainability development activity—are presented here, in several sections that follow after a brief summary of how and why shade coffee can serve to enhance the maintenance of biodiversity.

¹ No effort within the industry has been made to date to define a set of standards that could be used by all countries. This is not necessarily an obstacle, given that the concept is so novel. As concerns grow and attitudes mature with respect to the shade coffee issue, some attempt to “harmonize” the different initiatives will undoubtedly occur.

The ecological and socioeconomic services of shade coffee

The concept of managed terrestrial systems serving as conservation tools is relatively new. Mainstream conservation efforts and dogma have tended to ignore managed systems, characterizing them as tainted by human agency and therefore unworthy of attention. Recent work from a number of quarters, however, points to the ecological services provided by agroforestry systems such as shaded coffee and cacao lands. Agronomically, such systems can inherently serve to protect and enrich the soil, as well as reduce the need to use costly and toxic chemical inputs to control pests and/or weeds.

The ecological value of such agroecosystems has been suggested by their potential habitat services for organisms like birds, insects, and small mammals. Additionally, some may act as a refuge for biodiversity of epiphytic plants such as bromeliads, orchids, and ferns. A final ecological value relates to global climate change, in which the biomass bound up in the shade component, plus that of the soil layer, serves to fix carbon that might otherwise find its way into the atmosphere.

A significant gap in our knowledge about the environmental benefits of agroforestry systems pertains to the landscape. We do not yet understand how the patterns of the landscape mosaic can best protect biodiversity. Intuitively, we understand that natural forest remnants may better maintain their own levels of biodiversity if connecting “islands” or “corridors” of suitable habitat, such as shade coffee, are incorporated into the landscape.²

Socioeconomically, agroforestry systems like shade coffee play a risk reduction function for farmers. The non-coffee products derived from the shade component include fruits, firewood, and building materials. Less tangible cultural products from such systems are traditional medicines from the various plants, as well as ornamental or ceremonial plants used during the course of the year. An under-examined group of non-coffee products, aside from medicinal derivatives, is that of natural dyestuffs. A number of tree species commonly associated with coffee farms (e.g., avocado, walnut, wild fig) are traditional sources of textile coloring for indigenous populations.

Taken together, these ecological services, socioeconomic benefits, and agronomic advantages of shade make a strong case for the recognition and preservation of many of Mexico’s current coffee land management practices. In many of the country’s coffee regions, it is not a case of convincing farmers to introduce and maintain shade that adheres to the criteria presented here. Many are already doing so. Rather, it is a question of finding out where such land stewardship is being practiced, identifying those involved, and exploring ways to certify their holdings as “shade coffee.”

An overview of this document

We now turn the fruits of the workshop. There are five sections. The first is a matrix that presents the biophysical criteria for what constitutes shade coffee in a theme-by-theme format. Accompanying the matrix and explaining its arrangement and subject matter is the second section entitled “Criteria Categories/Themes.” The third part of the workshop results (the “Addendum”) presents areas of research to which funders concerned about linking conservation efforts to the market place—an example of which is the shade coffee issue—should pay particular attention. Next, workshop participants thought it prudent to alert the CEC to what they see as some of the logical “Next Steps” in this process that begins with the development of criteria for shade coffee, but must extend beyond the criteria workshop. Finally, a list of participants can be found at the end. [Note: Only sections one and two are included in this excerpted version of the full document.]

² This is obviously an important area of research for the future. Meanwhile, an effort has been made to include this landscape aspect into the criteria (within the “Shade Plus” category).

A final word about certification of shade coffee

Though no specific charge was given the workshop participants to develop a certification program outline, much of the discussion occurred with the assumption that the criteria presented here would eventually become part of a effort within Mexico to certify shade coffee. To a person, those involved in the workshop felt that shade coffee could play a positive role in Mexico's conservation efforts. At the same time, however, benefits need to be directed in a socially responsible way that supports the larger goal of sustainable communities in the rural landscape.

Certification should be the initial step in a series of efforts along the coffee commodity chain. If current trends in the North American specialty coffee market are any guide, a certified shade coffee will soon have a premium price attached to it. It is the consensus of the workshop participants that any effort to develop a shade certification must involve that part of the coffee sector that is 1) best positioned to take advantage of any certification due to current management practices, and 2) most in need of any forthcoming price premium. That portion of the sector is the small coffee producer.

Biophysical Criteria Matrix for Shade-grown Coffee

Theme	1. Criterion/Criteria	2. Recommendations	3. Plus ¹ Status
A. Shade tree vegetation cover	a. A minimum of 40% shade cover after pruning		a. Rustic coffee (as per the University of Chapingo classification) with $\geq 60\%$ shade cover (after pruning, if pertinent).
B. Structural diversity	a. Upper edge of canopy averages at least 12 meters in height, discounting the obvious emergent species; b. Various taller trees per hectare that reach at least 15 meters in height; if this is not satisfied, but criteria C-d is satisfied, farm will be considered in a transition phase ² for a period of 3 to 5 years.		a. An obvious stratum of shade trees defined by emergent species ≥ 20 meters in height.
C. Floristic diversity	a. The “backbone” type used for shade (the dominant genus) is native ³ and does not constitute more than 70% of the total tree density; b. Of the 30% (or more) remaining trees, all should be distributed within the interior of the cafetal and at least a third (or 10% of the total number) should be native forest species from the local area; c. At least 15 distinct species of trees should be used for shade; ⁴ d. There is visual evidence that the regeneration of large and long-lived species (in particular forest species) is taking place, based on practices of propagation of such species, care for seedlings, juvenile individuals and/or the creation and care of nurseries for these species; e. Epiphytic plants (bromeliads, orchids, ferns, etc.) are left on shade trees and any removal as a management practice is not permitted.	a. The presence of tall and slow-growing species associated with local native forests; b. Maintain “keystone” tree species such as <i>Ficus spp</i>	a. The presence of tall and slow-growing species associated with local forests. b. No more than 50% of the total density of shade trees comprising the “backbone” type.
D. Soil management	a. Soil has a year-round cover, be it a living ground cover or a leaf litter/mulch cover in decomposition; b. In cases of steep or highly broken terrain and high precipitation, soil conservation practices are required.		a. The use of organic fertilizer(s).

Theme	1. Criterion/Criteria	2. Recommendations	3. Plus ¹ Status
E. Agrochemical use	a. The use of any type of pesticide is strictly forbidden. In extreme cases the controlled use of copper sulfate and its derivatives to inhibit the spread of fungal disease(s) is permitted.	a. Make use of biological control methods where necessary and possible; b. Use organic fertilizers in place of synthetic fertilizers.	a. The absence of synthetic/inorganic fertilizer.
F. Fauna	a. Protection and enhancement of faunal diversity, and compliance with the national laws of environmental protection relating to such diversity.	a. The maintenance of dead trunks and snags within the coffee area.	
G. Conservation of waterways and natural vegetation	a. The application of water conservation measures that conform to national laws; b. Complying with extant norms governing effluents, producers cannot place into waterways or water sources the byproducts of wet processing.		
H. Landscape mosaic	a. Large production units (≥50 hectares) are required to maintain ≥10% of the area in reserves and vegetation that protects waterways.	a. Joint efforts among local producers to preserve natural areas contiguous with and/or nearby coffee areas	a. Evidence of community efforts by producers to preserve natural areas, such as documented agreements, recognized projects, formal activities.

¹The management of this system of added recognition for good stewardship resulting in a given farm being elevated to the “plus” level will be placed under the control of a group of advisors, most logically the same group that decides questions related to “transition phase” issues (see footnote 2).

²“Transition phase” refers to a waiting period prior to being certified as shade coffee due to noncompliance with the criteria. It may vary between 1 and 5 years, depending upon which criteria are involved. The transition phase is characterized by: no certification (until the time that specific criteria are met); annual monitoring to evaluate progress; having planted shade tree species of taller habit (≥15 meters) where heretofore none have been present; for cases of larger farms (≥50 hectares) in which there no areas are kept as reserves (or the areas do not constitute 10% of the total farm area), there should be evidence that the required area has been left in a state of natural restoration (3 to 5 year transition phase); for cases in which no soil conservation practices are in place, there should be evidence that such practices are being introduced (1 to 3 year transition phase); for cases in which floristic diversity criteria are not met, there should be evidence that measures are being taken to correct such discrepancies. All questions or decisions related to the transition phase will be forwarded to and/or decided by a consultative group of ecologists and agronomists versed in the issues of shade coffee.

³ Because shade tree species vary according to where one happens to be, for the purposes of this document, “native” refers to situations in which the tree species in question falls within its natural range of distribution.

⁴This number, while somewhat arbitrary, is much less than what has been observed by researchers in many situations. Some small coffee holdings have as many as 60 different tree species per hectare. Ideally, as pointed out in the accompanying documents, the total number of species required per hectare should be determined by the size of the production unit, in accordance with a variable scale based on a species/area curve. The field research and data analysis necessary to construct such a curve (which could be used by anyone inspecting a shade cover to assess whether or not it passes these criteria) is one tangible goal that needs to be addressed as soon as possible.

Criteria Categories/Themes

The following list of themes or categories used in the establishment of criteria for shade coffee in Mexico is based on the current “best thinking” of the various ways in which a shade coffee system can qualify as providing environmental benefits. Some of the benefits, as evidenced by the categories, are agronomic in nature. Others tend to be more ecological or environmental in focus. Taken together as a set of standards, we believe that these criteria provide the best balance between production demands on the one hand and environmental concerns on the other for coffee being grown in the present Mexican context.

Obviously, the notion of balancing environmental concerns such as “shade-coffee-as-a-refuge-for-biodiversity” against the production demands of growers such as maintaining coffee yields is new to scientific researchers—be they agronomists or ecologists. We have much uncharted terrain to map with additional research, the results of which will help construct the most useful avenue to a well-defined shade coffee. With that in mind, these criteria are best viewed as a “work in progress” which will undoubtedly undergo modification as more information from responsible research lights our way.

The criteria are presented in a matrix format (following this discussion). The themes (explained below) are the categories thought pertinent in defining shade coffee as a conservation tool in sustainable development. The criteria in Column 2 represent the minimum threshold that any given farm must satisfy in order to be called (and hence market its product as) “shade coffee.” Qualification is based on an all-or-nothing decision. All criteria must be satisfied in order to pass as “shade coffee.” The third column contains, where appropriate, recommendations relevant to the criteria for a specific theme. Growers should strive to comply with these recommendations where possible. The final column establishes a pathway for certain growers to attain elevated status (“plus status” or “super shade”) for their management practices. Again, these “plus status” criteria are an all-or-nothing condition, meaning that in order to qualify as “super shade,” all the conditions/criteria within this column must be met (as well, obviously, as those in the “criteria” column).

Even though no evident premium or bonus price structure has yet emerged for “shade coffee,” these criteria were developed with the assumption that such a price premium will eventually become a market reality. The goal in establishing the criteria was one of creating a minimum set of standards that define shade coffee, and then a set of criteria considered to represent better land stewardship from an ecological perspective. Growers managing farms that satisfy the general shade criteria would presumably receive a certain price premium. Those satisfying the general criteria *and* the “plus status” standards would be in position to reap a greater price premium. The minimum threshold criteria (the second column) and the plus status column (fourth column) provide a way in which an extra premium (providing a shade premium is forthcoming in the marketplace) could be awarded growers with shade management practices that display stewardship concerns beyond the individual farm level.

- A) Shade tree vegetation cover: this term refers to the foliage above the coffee layer. Satisfying the 40% minimum shade criteria means that one would have to observe foliage present above 40% of a number of randomly selected points within the *cafetal* [the coffee plantation]. This can be measured with inexpensive, hand-held instruments such as densitometers, in which 50 or 100 (or some other number of) randomly selected points within a farm are sampled. Each point is evaluated and marked as either “covered” with vegetation (in which a line of sight vertical to the sky encounters foliage from the shade component) or “open” (in which no foliage is found to be above said point).
- B) Structural diversity: applies to the overall architecture of the *cafetal*, with attention focusing on the spatial arrangement of the non-coffee vegetation (hardwood shade trees, woody fruit tree species, herbaceous fruits such as *Musa spp.*, etc.). It might relate to the various “layers” or “strata” often discernible in agroforestry settings. In general, the more strata the better. Conversely, it might, in the case of coffee—where layers are not so readily observed and where the shade is often “raised” by pruning away lateral limbs and branches closer to the ground to

provide for air movement within the cafetal—be viewed in terms of the “depth” of the shade. Depth would be a measurement in any given spot of the vertical distance between the lowest and highest points (from ground level) at which foliage is encountered. A shade cover composed of mixed tree species, each with its distinct habit and (perhaps) pruning regime, will generate a dynamic, fluctuating shade depth as one moves horizontally across the cafetal. In general, the deeper the shade the better.

Twelve meters is determined to be the minimum average height of the uppermost edge of the canopy. The height of obvious emergent species should not be included in estimating this average, but the use of emergent species is certainly encouraged. Several individuals with heights ≥ 15 meters should be present in any given hectare of coffee.

- C) Floristic diversity: this term applies to the species mix or diversity of the shade trees. Most studies of the use of shade in coffee farms reveal a dominant tree species or genus used as the main shade tree type. This is called the “backbone” tree type, around which other less common species can be found. In Mexico (as in much of Latin America), several species belonging to the genus *Inga* are commonplace shade trees. This species or genus must be native (not exotic), which, for the purposes of these criteria, means that the farm in question falls within the range of distribution of this tree type. No more than 70% of the shade trees should belong to this backbone grouping, so as to provide a minimum level of floristic diversity. The remaining fraction of tree species ($\geq 30\%$) should be distributed in a non-clumped manner within the cafetal (i.e., not restricted merely to living fences or border-marking trees), with at least one-third ($\geq 10\%$ of the total number of trees) being native species associated with local natural forests.

Setting a minimum number figure for species diversity of shade trees poses some challenge. There is simply no work done to date that can inform us in such a task. Naturally, ecological theory and experience tell us that the greater this number, the better for biodiversity maintenance. However, coffee farmers are not in business to maintain biodiversity. They grow coffee to make a living, and worrying about the array of shade tree species is not foremost in their minds. Still, it must be recognized that relatively small holdings may harbor as many as 60 species per hectare in parts of Mexico. Moreover, even on large holdings with “uniform” shade comprised of one or more *Inga* spp., an observant and methodical walk through the farm usually uncovers a rich array of local species that have “volunteered” and been left to grow. So, even though larger farms might be dominated by a single species (or genus) of tree as the backbone to the shade component, the total number of species can easily reach into the dozens.

It was, therefore, the consensus of the workshop participants that the number of species expected to be on a farm needs to be linked to the size of the coffee area. The responsible, research-based manner to realize this species-area relationship is to construct what is called a species-area curve.... Since no such curve currently exists for Mexican (or any) coffee farms, the minimum number of species per farm (for the time being) should be no less than 15. This minimum number will, in all likelihood, increase (even for smaller holdings) once a species area curve is constructed from real-life coffee farms.

The presence of epiphytic plants on the trunks, limbs and branches of the shade trees is encouraged. Epiphytes such as ferns, bromeliads and orchids add to the overall plant diversity of the cafetal not only in floristic terms but with respect to structure as well. Arthropods and microorganisms thrive in such specialized niches, providing a base for other organisms such as birds, reptiles, amphibians and mammals. Due to climatic conditions, not all areas support epiphytic life forms; but in those that do, growers should not remove epiphytes as part of their management practices. Cultural practices in some regions make use of specific epiphytes for ceremonial or celebratory purposes, uses that should not be forbidden.

Soil management: Agricultural and ecological systems alike depend upon the productive base, the soil. For reasons of soil protection against hydric and aeolic erosion, as well as for reasons of nutrient cycling and soil structure, the soil should have a year-round cover. Whether a living

cover of vegetation or a cover of mulch in the process of decomposition, the soil layer should at no time during the year be exposed by the complete removal of such cover. In situations characterized by steep hillsides or highly broken terrain, and especially where high precipitation prevails at any time during the year, the practice of soil conservation measures should be evident.

In order to classify as a “plus status” land manager, the grower should use organic fertilizer(s).

- D) Agrochemical use: Because shade coffee can provide refuge for biodiversity, the use of pesticides of any kind (insecticides, herbicides, fungicides, and nematocides) is not allowed. In extreme cases where fungal disease(s) threaten the economic well-being of the crop, copper sulfate and its derivatives can be used in a controlled manner to stop the spread of disease. It is recommended that the use of biological control agents be used whenever possible, as well as replacing synthetic/inorganic fertilizer(s) with organic fertilizer(s). A farm can pass into the “plus status” category if, in addition to the minimum criteria being met, a grower demonstrates that no petroleum-based, synthetic/inorganic fertilizers are being applied to the coffee.
- E) Fauna: Inasmuch as shade coffee provides habitat for various fauna (arthropods, birds, reptiles, amphibians and mammals), growers should protect and enhance the faunal diversity as much as possible. It is expected that producers comply with national environmental protection laws relating to faunal diversity. It is recommended that the farm show evidence of maintaining dead tree trunks and snags where possible within the coffee area, as such objects provide habitat (foraging and nesting sites) for a number of taxa.
- F) Conservation of waterways and natural vegetation: Growers should apply water conservation practices along streams and rivers that conform to national norms. In accordance with national laws governing effluents, no byproducts (liquid or solid) from the wet processing of coffee berries can go into waterways.
- G) Landscape mosaic: This term refers to the diversity of land-use patterns in a region and recognizes the importance of a larger-scale (a landscape) approach to conservation. The promotion and use of shade coffee in land management at the individual farm level is a critical aspect of providing habitat and protecting soils. But the conservation literature identifies the overall condition of a region’s landscape as being equally important, especially where shade coffee is to provide corridors or stopover points between undisturbed protected areas. For that reason, it is important that reserves or protected area be maximized where possible, and that communities work in concert to foster a landscape mosaic conducive to conservation.

Large holdings (≥ 50 hectares) should have 10% (or more) of the total farm area in reserves and/or natural vegetation protecting waterways. It is recommended that producers work in joint efforts to preserve local natural areas adjacent to and/or within close proximity to coffee areas. In order to gain “plus status,” there must be evidence of community efforts by producers to preserve such natural areas. Evidence of such efforts will include (but not be limited to) documented agreements, formally recognized projects or programs, and collaborative activities at the community level.