

# Guatemala Field Survey Report

Prepared by  
Conservation International

Teresa Castillejos, Elizabeth Baer  
and Bambi Semroc

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# Executive Summary

As part of an ongoing process to assess and evaluate the results of the Starbucks Coffee and Farmer Equity (C.A.F.E.) Practices program since its inception in 2004, Conservation International (CI) developed and implemented a field survey among coffee farmers at two sites in Guatemala in July 2009. The sites selected – Huehuetenango and Jalapa – are important both for coffee production and supply to Starbucks, and for conservation of globally threatened species. Both sites have high concentrations of farms participating in the C.A.F.E. Practices program.

The objective of the survey was to determine whether there was any difference in economic, social and/or environmental performance between farmers participating in C.A.F.E. Practices and non-participants. A team at CI worked with Starbucks and partner organizations and experts in Guatemala to develop and implement a survey consisting of 61 questions covering production levels, income, labor conditions, as well as conservation of biodiversity and other natural resources. We trained 25 coffee extension agents from ANACAFE (Asociación Nacional del Café de Guatemala) and FEDECOCAGUA (Federación de Cooperativas Agrícolas de Productores de Café de Guatemala, R.L.) living in communities at these two sites to implement the survey. We interviewed 582 farmers – 312 of which were participating in the C.A.F.E. Practices program and 270 who were not. The overwhelming majority of farms surveyed were smallholders with less than 12 hectares under coffee production, which was representative of the region. We also interviewed representatives from export companies, cooperative associations and protected areas agencies to further validate the survey responses.

This study found that participation in C.A.F.E. Practices shows some strong correlation to the following economic and social benefits to farmers as well as improvements in natural resource management and conservation:

- C.A.F.E. Practices participants at both sites were more likely to realize improvements in coffee quality than the control group; in Huehuetenango these farmers also reported improvements in yields. There was also a strong correlation between management plans and improvements in coffee quality among farms participating in C.A.F.E. Practices.
- Farmers participating in C.A.F.E. Practices reported a decrease in the use of herbicides, pesticides and chemical fertilizers at higher rates than those in the control group.
- There was a strong relationship between participation in C.A.F.E. Practices and increase in natural habitat on farms. Farmers participating in the program were also more likely to report improvements in the quality of the habitat and to report more species observed.
- In Jalapa, farmers participating in C.A.F.E. Practices were more likely to invest in the conservation of biodiversity and water quality in addition to improvements in coffee production and quality. Farmers in the control group tended to invest primarily in the latter.
- Participating farmers in both regions were more likely to be in cooperatives with established financial funds and to participate in other certification programs. Participating farmers in Jalapa were also more likely to have greater access to government assistance .

- In Huehuetenango, where on-farm wet milling was more common, farmers participating in the program were more likely to report a decline in water used during processing.

The survey also helped identify the following opportunities for improvement in environmental management of coffee farms in the region:

- Farmers in Jalapa reported higher rates of natural habitat loss than in Huehuetenango, which may warrant some further research to identify drivers behind this trend and interventions that could be undertaken to slow or reverse it.
- Farmers reported that meeting the processing waste and garbage management requirements were the greatest challenges for participating in the C.A.F.E. Practices program and may require additional training on these criteria.
- Opportunities for further improvements related to waste management and reuse in wet milling operations should be explored in Huehuetenango.
- Protected areas managers expressed a lack of awareness about the program and a desire to learn more about it – in particular how it could assist in the formation of private protected areas on farms and the engagement of smallholders in conservation activities.
- Export companies expressed a desire for additional training on conservation issues related to coffee production to enable them to better provide the necessary advice and assistance to producers within their supply chain participating in C.A.F.E. Practices.

This study marks as significant milestone in the process of monitoring and evaluating the contribution of C.A.F.E. Practices to coffee farmers, workers and natural resource conservation. While it represents only two coffee producing regions in Guatemala, it could be replicated in these two sites and in additional regions to provide a baseline from which to monitor longer-term changes that can inform the further development of the program. These studies can also play a key role in identifying any challenges and inform the development of strategies to provide technical and other types of assistance to producers in the region that is targeted to the specific needs of farmers.

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# Introduction & Objectives

In 2004 Starbucks launched the Coffee and Farmer Equity (C.A.F.E.) Practices coffee sourcing guidelines, which established a set of best practices for environmental and social performance among coffee producers with prerequisites for quality and economic transparency. The program encourages the adoption of best practices for social responsibility and environmental leadership in coffee growing and processing among coffee producers. It includes verification by a third party of farm and mill performance related to hiring practices and working and living conditions for workers as well as conservation of water, soil and local wildlife, as well as introduction of environmental management programs on farms. The underlying hypothesis of the program has been that implementation will result in increased uptake of best practices within coffee production landscapes and that these practices will result in improvements in both the environment and the socio-economic livelihoods of farmers and workers.

Guatemala was one of the first countries to participate in the C.A.F.E. Practices program and some producers even participated in the precursor to the program – the Preferred Supplier Program – that began in 2001. Guatemala is an important source of coffee for Starbucks, representing one of the top suppliers during the company's 2008 Fiscal Year.

While analysis of verification reports from year to year enables tracking of performance trends among participating coffee producers, it does not show how producers participating in the program perform relative to those not participating. To better understand this relationship, CI worked with local partners to conduct a field survey of coffee farmers in two key production regions of Guatemala in July of 2009.

The objectives of the survey were to:

- Understand the role of C.A.F.E. Practices in driving changes in socio-economic and/or conservation performance within priority coffee landscapes in Guatemala.
- Identify the perceived value of C.A.F.E. Practices among participants in Guatemala.
- Identify potential incentives (e.g. financial, technical assistance, carbon credits) that would retain participants in the program over the long-term.
- Develop a methodology that can be replicated in other key supply countries.
- Inform recommendations for improvements to the C.A.F.E. Practices program moving forward.

# Methodology

We developed and conducted a farmer survey consisting of 61 questions ranging from general information about the size of the farm and production levels, to labor practices and conservation of natural resources.<sup>1</sup> The majority of questions were close-ended questions with ordered response choices. We used recall data from participating coffee growers to re-establish the baseline of the production, social and environmental conditions at the two sites to allow comparison of conditions prior to entering the program (for farms participating in C.A.F.E. Practices) or prior to when the program was first introduced to the region (for the control group).

We trained 25 surveyors from ANACAFE (Asociación Nacional del Café de Guatemala) and FEDECOCAGUA (Federación de Cooperativas Agrícolas de Productores de Café de Guatemala, R.L.) on the survey implementation. These local teams, which have longstanding relationship with the coffee farmers, have established a level of confidence among the coffee producers, making it more likely that the producers will answer the survey questions. The local teams also know the local roads, making locating the farms easier. We recognize that using these organizations could lead to some biases in the results, but we felt it was necessary to engage the farmers through them to achieve the levels of participation required. These individuals were already working in the communities selected for participation and conducted a total of 582 farmer surveys in the Huehuetenango and Jalapa regions of Guatemala. Farms included in the survey consisted of those participating in C.A.F.E. Practices that underwent verification in 2007, with a control group of farms not participating in the program. The selection of farms to include in the survey was based on a semi-random sample of farmers verified under C.A.F.E. Practices during 2007 and working with cooperatives in that region to identify farmers for the control group. Working with participating cooperatives to identify the sample limits our ability to take a truly random sample, but enabled us to identify farms in the region and facilitated access to them. The selection of C.A.F.E. Practices farms was stratified according to the approval status (verified, preferred, strategic) received in 2007. We were unable to stratify the sample according to farm size (small, medium, large) due to the overwhelming number of small farms in each of the sample sites, but the distribution among farm sizes is consistent with the overall distribution of small, medium and large farms within Guatemala and thus should be considered representative.

Selection of the two survey sites was made using GIS analysis to overlay farms verified in 2007 with site-level biodiversity priorities in each country using the Alliance for Zero Extinction (AZE), Key Biodiversity Areas, and World Database on Protected Areas datasets. In Guatemala there was a high degree of concentration of coffee farms surrounding two AZE sites – La Cumbre and Miramundo – that hold the last remaining populations of two critically endangered amphibians. AZEs are designated using point data, so for each of the two sites we drew a 10km radius around the point to demarcate the study area for the survey and identified farms occurring within this radius. Table 1 presents a list of municipalities that participated in the survey.

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<sup>1</sup> See Appendix A for the list of survey questions.

**Table 1: List of municipalities with farmers participating in the survey**

	<b>Municipalities</b>	<b>Department</b>
<b>1</b>	Huehuetenango	Huehuetenango
<b>2</b>	Cuilco	Huehuetenango
<b>3</b>	San Pedro Necta	Huehuetenango
<b>4</b>	La Libertad	Huehuetenango
<b>5</b>	La Democracia	Huehuetenango
<b>6</b>	Sansare	El Progreso
<b>7</b>	Jalapa	Jalapa
<b>8</b>	San Carlos Alsatate	Jalapa
<b>9</b>	Mataquescuintla	Jalapa
<b>10</b>	Casillas	Santa Rosa
<b>11</b>	San Rafael Las Flores	Santa Rosa

Based on this analysis, we identified two clusters: One in Huehuetenango consisting of 98 C.A.F.E. Practices farms verified in 2007, and another in Jalapa with 128 verified farms.<sup>2</sup> For this reason, we surveyed at least 100 farms in each cluster and then matched this with an comparable number of farms not participating in the program. To identify farmers in the control group, we worked with ANACAFE to identify communities around the AZEs where independent coffee producers are located. We identified 50 producers for each site based on records from cooperatives participating in the C.A.F.E. Practices program as well as those who are not part of the C.A.F.E. Practices program. As a result of this sampling we conducted a total of 582 surveys – 356 in Huehuetenango and 226 in Jalapa (see Table 2) – representing farmers from 95 communities and 11 different cooperatives.<sup>3</sup> The surveys were carried out by ANACAFE and FEDECOCAGUA community extension agents over the course of a two-week period at each site.

**Table 2: Number of surveys conducted by site**

	<b>Huehuetenango</b>	<b>Jalapa</b>	<b>Total</b>
<b>C.A.F.E. Practices</b>	198	114	312
<b>Control</b>	158	112	270
<b>Total</b>	356	226	582

We compiled the results in a simple Excel database and conducted the analysis using simple analytical procedures coupled with statistical analysis to determine the significance of the results. To determine whether the differences we observed among responses reported by participants in C.A.F.E. Practices and the control group were significant or if a change occurred from before C.A.F.E. Practices was implemented to after, we ran a series of statistical tests. In most cases we compared the frequency of yes/no responses or the frequency of responses on a scale of 1-3. In these cases, we used a chi squared test, or the Fisher's exact test when sample sizes were very small. In a few cases (such as where we compare wages paid or price received) we used the Mann-Whitney U test. In all cases, we

<sup>2</sup> Because the number of farms audited in any given year is based on a sampling procedure for small and medium farms, these farm numbers most likely under-represent the actual number of farms participating in C.A.F.E. Practices within the site.

<sup>3</sup> For a list of participating cooperatives, see Appendix C. A list of communities is provided in Appendix D.

used a threshold for significance of 0.05. This means that when we report a “statistically significant” result, there is less than a 5% chance that the result is not actually due to a real difference between the compared results.

In addition to surveying farmers at these two sites, we interviewed representatives from cooperatives, export companies, protected area managers and other organizations working at the site to triangulate the responses and re-establish a baseline of what the site looked like prior to C.A.F.E. Practices, identify whether any changes occurred, and elucidate the role the program played in driving these changes.<sup>4</sup> Additional research to re-establish the baseline conditions in 2005 was compiled using regional and national statistical datasets on social and environmental conditions.

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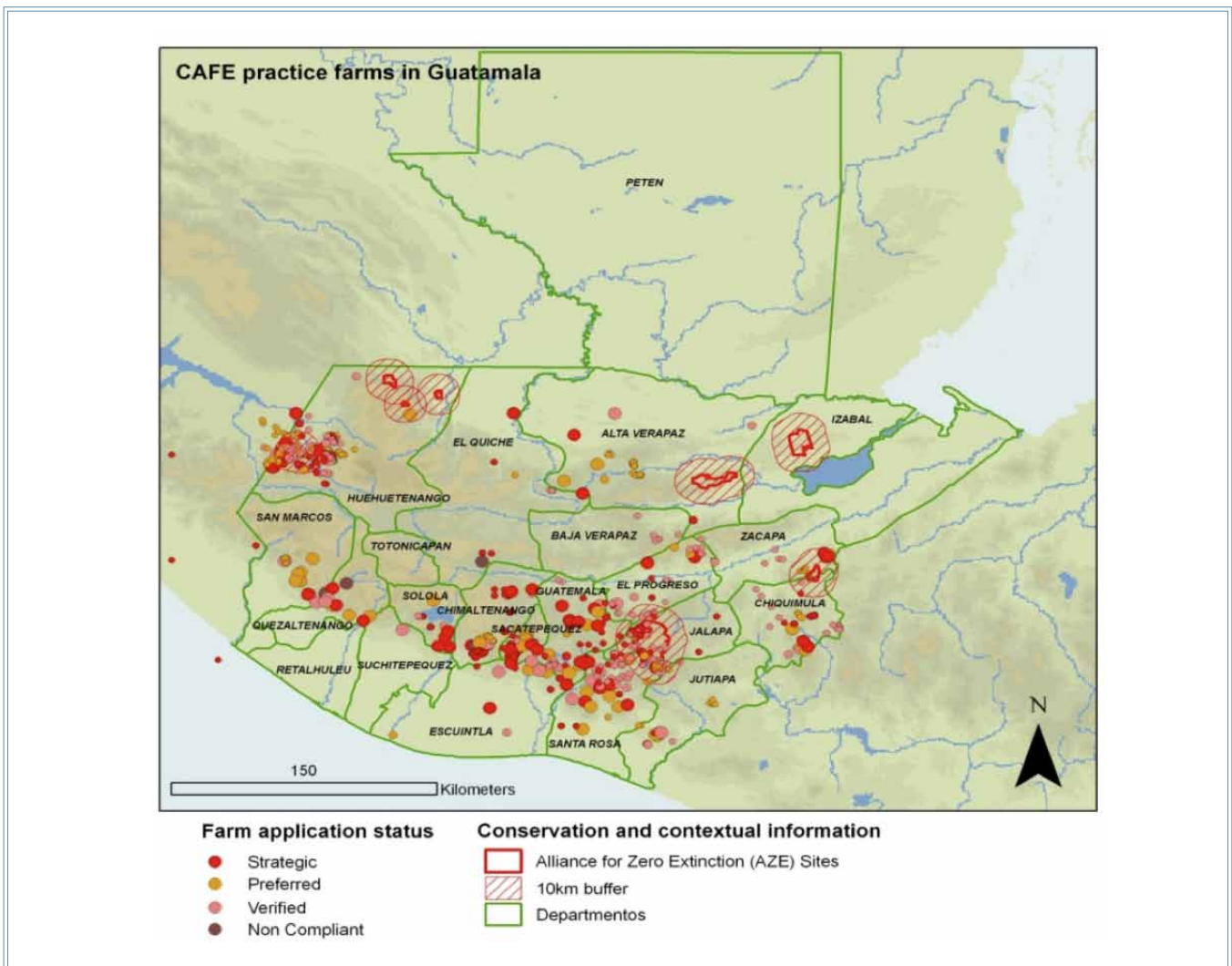
<sup>4</sup> For a list of organizations interviewed, see Appendix D.



# Description of Study Area

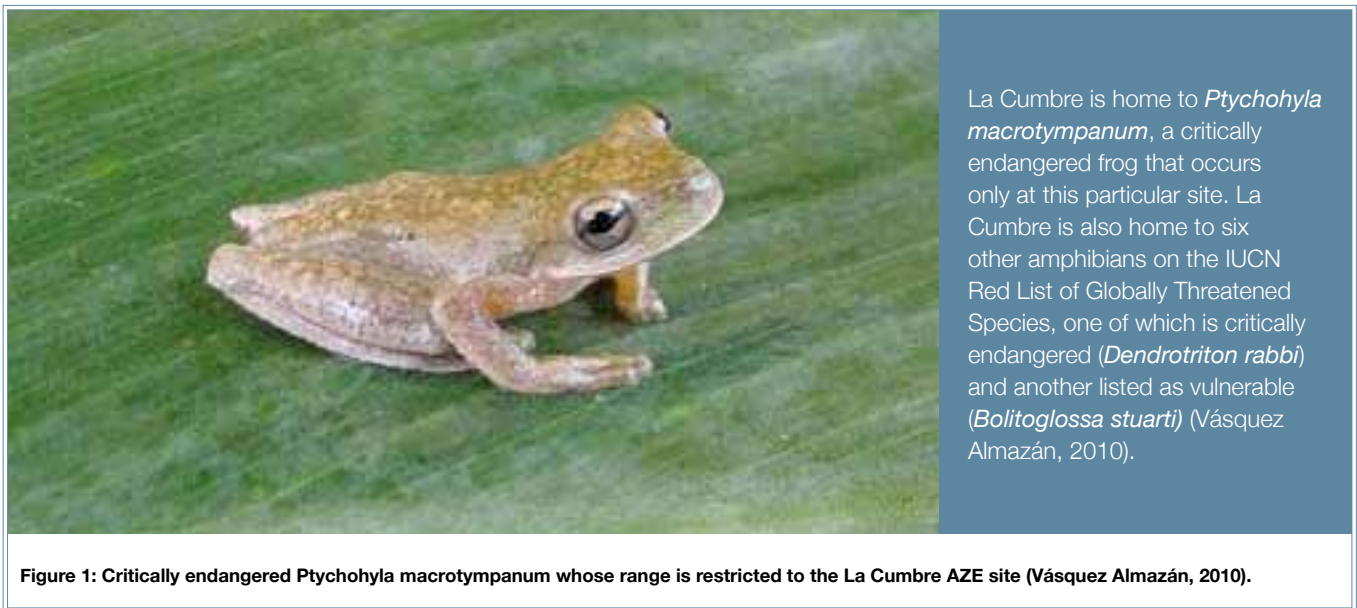
Guatemala lies within the Mesoamerica Biodiversity Hotspot and is a center of origin and dispersal of tropical salamander species (Mittermeier et al, 2004). Coffee is a major economic activity in Guatemala and the majority of coffee production takes place along the Sierra Madre mountain chain that extends from southern Mexico into the southwest region of Guatemala – an area that overlaps significantly with priority sites for conservation of salamanders and other globally threatened species. Coffee production accounts for 12% of the country’s gross domestic product and 30% of total exports (World Bank, 2009). The most current data available is from the 2008/2009 production year when 3,492,822 bags (60 kgs each bag) of coffee were exported from the country to all destinations (ICO International Coffee Organization, 2010).

Coffee is not only of economic importance for the country, but also plays a key role in social development – especially in the rural areas – as it offers a significant source of employment and is intricately linked to land tenure in the rural areas. The rural areas of Guatemala have extremely high rates of poverty with more than 51% of the population living below the poverty line (World Bank, 2006). Agriculture – and coffee production in particular – represents the most important economic activity in these areas. The most recent data available for the coffee sector was from 1992, at which time the sector included 43,800 producers and employed over 300,000 people, representing 11% of the active population in Guatemala (Roux and Nassar, 1992).



The vast majority of these coffee producers in Guatemala are smallholders with less than five hectares under production although they represent only 30% of total coffee production (UNCTAD, 2002). Thus, the majority of coffee production is from a relatively small number of medium and large farms. Small farms tend to rely solely on family labor and this is represented in the survey results in which very few farms reported using any type of contracted labor. Most smallholders are also associated with a cooperative that facilitates their access to credit and government support and assists in the export and marketing process, while medium and large farms are often independent producers.

For the purposes of this study, we focused the field survey on two important coffee-producing regions of Guatemala: Huehuetenango and Jalapa. Huehuetenango is located in northwestern Guatemala along the border with the Mexican state of Chiapas. The site lies within the Sierra Madre mountain chain that extends from Southern Mexico into Guatemala. Huehuetenango contains three AZE sites due to the presence of critically endangered species that occur no place else on Earth. Our survey focused on the La Cumbre AZE site located in the valley between the municipalities of La Libertad and La Democracia – a region that has a tradition of organic coffee cultivation (Vásquez Almazán, 2010).



Farmers at this site have a long history of producing high-quality coffee and even participated in the precursor to C.A.F.E. Practices (the Preferred supplier Program, launched in November 2001) and have continued to participate in the program through the years. Coffee is grown at an elevation of between 1000 and 1800 meters above sea level, where the average temperature is 66.2°F/19°C and average rainfall is between 3000 and 5000 milliliters per year. The La Cumbre region is known for its production of high-quality, organic coffee and studies have shown that this production is compatible with conservation of the critically endangered frog that occurs at the site.

The second survey site, Jalapa, is located in southwest Guatemala and is another key region for coffee production within the Starbucks supply chain. It is also another site important for amphibian conservation.



Scientists have identified the Cerro Miramundo site as an AZE based on the presence of the critically endangered amphibian species, *Pseudoeurycea expectata*. The site is also home to 6 other important amphibian species – one of which is critically endangered (*Plectrohyla guatemalensis*) and a second which is listed as endangered (*Plectrohyla sagorum*) according to the IUCN Red List (Vásquez Almazán, 2010).

**Figure 2: Critically endangered *Pseudoeurycea expectata* known only to occur at the Cerro Miramundo site. Photo by David Wake, UC Berkeley as published in Vásquez Almazán, 2010.**

The cloud forest of Miramundo is located in the eastern province of Jalapa and reaches an altitude of 2,950 meters above sea level (INSIVUMEH, no date). Coffee production takes place at an elevation of between 1,000 to 2,000 meters where the average temperature is 81°F / 27°C. Water resources on farms in Jalapa are very limited. There is lower-than-average annual rainfall (average is between 2,000 and 4,000 milliliters) and comparatively few water bodies. This shortage of water in the region prevents farmers from using wet milling on their farms to process the harvested coffee beans before transport to mills. Farmers deliver coffee to mills as coffee cherry and then mills in the region provide processing services (wet and dry milling).

# Farmer Survey Results

## General

The survey was administered to a total of 582 respondents in the two survey sites Huehuetenango and Jalapa. In Huehuetenango, we surveyed a total of 356 farmers, of which 56% are participating in C.A.F.E. Practices. Of all surveyed farms in the region 98% were “small” (less than 12 hectares), with just three “medium” (12ha or larger, but smaller than 50ha) and three “large” (50ha and larger) farms included in the study. In Jalapa, we surveyed a total of 226 farmers, 50% of which are C.A.F.E. Practices participants. Of all farms surveyed in the region 96% were small farms. No medium farms were surveyed at this site, and only three large farms were surveyed. There were an additional seven respondents (1 in Huehuetenango and 6 in Jalapa) who did not report their farm size.

In addition to the six large farms surveyed and included in this analysis, supplier lists showed an additional six large farms across the two sites. Five of these farms were located in Huehuetenango and participated in C.A.F.E. Practices at one point, but had since dropped out of the program. To explore the reason for leaving the program, CI conducted informal telephone interviews with three of these farms. In each case they reported that they left the program based in part on opportunities to gain better prices through participating in other programs.

### **Most respondents have been participating in C.A.F.E. Practices for multiple years.**

C.A.F.E. Practices was formally introduced in Guatemala in 2004, and since 2005 the program has received applications from both Huehuetenango and Jalapa.

In Huehuetenango, the majority (51%) of farmers participating in C.A.F.E. Practices reported joining the program three years ago, but over a quarter (29%) joined four or five years ago. The remaining 20% of farmers joined more recently: 15% joined two years ago, and 5% had joined one year ago.

In Jalapa, 81% of farmers reported joining C.A.F.E. Practices 3 years ago while 15% had been participants for five years and 4% were more recent participants who joined just two years ago.<sup>5</sup>

## Economic Incentives

### **In Jalapa, farmers participating in C.A.F.E. Practices received a higher price for their coffee.**

In the 2006/2007 season in Jalapa, farmers participating in C.A.F.E. Practices reported receiving an average of 764 Q/qq (Quetzales per quintal) with a range of 635-950 Q/qq. This is higher than reported by the control group for the same season: an average of 667 Q/qq with a range of 500-875 Q/qq. Statistical tests show these results to be statistically significant. In the 2007/2008 season, C.A.F.E. Practices participants reported receiving an average of 804 Q/qq, with a range of 700-925 Q/qq. During that same year, the control group reported receiving an average of 744 Q/qq, with a range of 420-900 Q/qq. This also represents a statistically significant difference. In the 2008/2009 season, C.A.F.E. Practices participants reported receiving an average of 812 Q/qq, with a range of 700-950 Q/qq. Again, this represents a statistically significant difference when compared to the control group, who reported receiving an average of 790 Q/qq, with a range of 435-900 Q/qq.<sup>6</sup>

In addition, the price received by participating farmers across the two sites differed in a statistically significant way for both the 2006/2007 and 2007/2008 seasons in the regions. In the 2006/2007 season, farmers in Jalapa (both C.A.F.E. and control) received an average of 713 Q/qq while farmers in Huehuetenango received an average of

<sup>5</sup> Survey question #6, administered only to C.A.F.E. Practices participants (identified in question #5).

<sup>6</sup> Survey question #15.

656 Q/qq. In 2007/2008, farmers in Jalapa received an average of 773 Q/qq, while farmers in Huehuetenango received an average of 734 Q/qq. There was no significant difference in the 2008/2009 season.<sup>7</sup> The difference in prices received by farmers in the Jalapa and Huehutenango regions is not necessarily a reflection of prices paid by Starbucks. Rather, the two regions have different crop cycles that results in a 30 to 40 day difference in the timing of the harvest. In the end, this can result in price variations due to the inherent volatility of the coffee market.

**Table 3: Prices received as reported by farmers over 3 years (prices given in Quetzales per quintale).**

Region	2006/2007				2007/2008				2008/2009			
	avg	min	max	n	avg	min	max	n	avg	min	max	n
Huehuetenango	656	400	890	346	734	480	900	348	792	526.5	900	352
Jalapa	713	500	950	194	773	420	925	198	801	435	950	210
Control	667	500	875	102	744	420	900	102	790	435	900	104
C.A.F.E.	764	635	950	92	804	700	925	96	812	700	950	106

In Huehuetenango, the prices received by farmers did not vary in a statistically significant way between the C.A.F.E. Practices group and the control group. In the 2006/2007 season, farmers reported receiving an average of 656 Quetzales per quintal, with a range of 400-890 Q/qq. In the 2007/2008 season, farmers reported receiving an average of 734 Q/qq with a range of 480-900 Q/qq. In the 2008/2009 season, farmers reported receiving an average of 792 Q/qq, with a range of 526.5-900 Q/qq.<sup>8</sup>

### **C.A.F.E. Practices may be a gateway to participation in other third-party verification programs.**

Only two respondents from the Huehuetenango control group reported participating in any other third-party verification program (Utz and 4C). However, 86% of C.A.F.E. Practices participants in the region reported participating in at least one additional program – and many participated in several additional programs. Among farmers who participate in at least one additional program, Utz and 4C were the most common, with over 80% of C.A.F.E. Practices participants participating in both. More than half of C.A.F.E. Practices participants also participate in Fair Trade and nearly half participate in Rainforest Alliance.

In Jalapa, only one respondent from the control group reported participating in any other third-party verification program (Utz). Among C.A.F.E. Practices participants, participation in other programs was not as prevalent as in Huehuetenango, but still significant. 54% of participants reported participating in at least one additional program. Nearly half (46%) of all C.A.F.E. Practices participants in Jalapa reported participating in Utz. In addition, 38% and 36% reported participating in Fair Trade and some “other” program, respectively. In all cases where farmers surveyed said they participated in a program not listed in the survey and volunteered information on the name of the program, it was identified as Nespresso AAA.<sup>9</sup>

<sup>7</sup> Ibid.

<sup>8</sup> Ibid.

<sup>9</sup> Survey question #7.

**Table 4: Participation in Other Programs: Distribution of All Surveyed Farms\***

Region	none	Rainforest Alliance	Fair Trade	Utz	Organic	4C	other	n
<b>Huehuetenango</b>	<b>51%</b>	<b>26%</b>	<b>28%</b>	<b>47%</b>	<b>1%</b>	<b>45%</b>	<b>0%</b>	<b>356</b>
control	99%	1%	-	1%	-	1%	-	158
C.A.F.E.	14%	46%	51%	83%	3%	80%	1%	198
<b>Jalapa</b>	<b>72%</b>	<b>2%</b>	<b>19%</b>	<b>23%</b>	<b>0%</b>	<b>3%</b>	<b>18%</b>	<b>226</b>
control	99%	-	-	1%	-	-	-	112
C.A.F.E.	46%	4%	38%	46%	1%	6%	36%	114
<b>control Total</b>	<b>99%</b>	<b>0%</b>	<b>-</b>	<b>1%</b>	<b>0%</b>	<b>0%</b>	<b>-</b>	<b>270</b>
<b>C.A.F.E. Total</b>	<b>25%</b>	<b>31%</b>	<b>46%</b>	<b>70%</b>	<b>2%</b>	<b>53%</b>	<b>13%</b>	<b>312</b>
<b>Grand Total</b>	<b>59%</b>	<b>17%</b>	<b>25%</b>	<b>38%</b>	<b>1%</b>	<b>29%</b>	<b>7%</b>	<b>582</b>

\*respondents could select more than one option (rows do not add up to 100%)

### **C.A.F.E. Practices Participants in Jalapa reported investing more heavily in environmental management than the control group.**

In Jalapa, there is a link between participation in C.A.F.E. Practices and investment in biodiversity conservation, improvement of water quality, erosion control and improving coffee quality. The greatest area of investment for farmers from the control group is around increasing coffee productivity (58%) followed by increasing coffee quality (39%). Control group farmers do not report investing in environmental management activities or improvements to working conditions in significant numbers. In contrast, the C.A.F.E. Practices participants report investing most heavily in erosion control measures (65%) before increasing coffee production (52%) and increasing coffee quality (56%). Significant numbers of C.A.F.E. Practices farmers report investing in biodiversity conservation (30%) and improving water quality (22%).

In Huehuetenango, 61% of all farmers report investing most heavily in increasing coffee production and 52% report investing in improving coffee quality. Fewer than 15% of respondents report investing in biodiversity conservation, improvements to water quality, erosion protection or improvements to working conditions (e.g. housing, education or medical). There is no significant difference between investment priorities reported by C.A.F.E. Practices farmers as compared to the control group. Although focus on environmental management remains a comparatively low priority according to the survey results, the percentage of C.A.F.E. Practices farmers reporting that they have made investments in biodiversity conservation and improvement to water quality has increased when compared to before they began participating in C.A.F.E. Practices.<sup>10</sup>

### **C.A.F.E. Practices participants in Jalapa have greater access to government assistance programs than the control group.**

In Jalapa, participation in C.A.F.E. Practices is linked to greater access to government assistance programs. Although respondents in both the C.A.F.E. Practices and control groups reported receiving government support for education and health, a greater proportion of C.A.F.E. Practices participants had access to these programs (68% and 63%, respectively, compared to 47% in both cases for the control group). These results were statistically significant. In addition, only C.A.F.E. Practices participants reported receiving assistance for infrastructure improvements or

<sup>10</sup> Survey question #9.



participation in payment for ecosystem services (PES) incentives, though the percentage that receives this assistance was low in both cases.

In Huehuetenango, the difference between reporting rates for C.A.F.E. Practices participants and the control group was statistically significant, with 45% of respondents reported receiving government assistance for education and 35% reported receiving government assistance for health.<sup>11</sup>

### **C.A.F.E. Practices participants identify management of waste water and waste as the greatest challenges to participation in the program.**

Responding to an open-ended question, C.A.F.E. Practices participants identified the greatest challenges they faced in participating in the program. Of the farmers participating in the program, 58% provided an answer to this question. Responses that could be grouped under the theme of management of waste water and waste were most frequently reported. Respondents also identified the following challenges in significant numbers: soil conservation; maintaining documentation for traceability and monitoring; payment of minimum wage; maintenance of coffee shade without use of herbicides and pesticides; and, improvement of coffee quality.<sup>12</sup>

### **C.A.F.E. Practices participants expressed a desire for better prices for their coffee.**

Responding to another open-ended question, C.A.F.E. Practices participants identified benefits they wished to receive as participants in the program. The vast majority of respondents reported that they desired to receive better prices for their coffee. A significant number of respondents also wished to receive access to credit at preferential rates and additional training in how to improve under C.A.F.E. Practices.<sup>13</sup>

### **C.A.F.E. Practices participants in Jalapa identified multiple benefits of participation in the program.**

Over half (69%, N=74) of the C.A.F.E. Practices participants in Jalapa identified benefits they received by participating in the program. Among these respondents 45% received a price premium, 36% gained access to credit, 8% received more stable long-term contract terms and 8% gained access to training.

Too few participants in Huehuetenango responded to the question to allow for analysis.<sup>14</sup>

## **Social Responsibility**

### **Small farms generally hire only seasonal and part-time workers.**

In both regions, fewer than 10% of respondents reported hiring permanent farm workers. Because small farms do not employ workers in significant numbers on a permanent basis, the reporting on benefits provided to workers focuses only on temporary (e.g. seasonal and contract labor) and part-time workers.

In Huehuetenango, 27% of all small farmers reported hiring temporary workers and 26% reported hiring part-time workers. Each farm hired an average of eight temporary workers and seven part-time workers. There is not a significant difference between the control group and C.A.F.E. Practices.

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<sup>11</sup> Survey question #10.

<sup>12</sup> Survey question #11.

<sup>13</sup> Survey question #12.

<sup>14</sup> Survey question #13.

In Jalapa, 47% of all respondents reported hiring temporary workers and 12% reported hiring part-time workers. Although there is some difference in hiring among C.A.F.E. Practices participants and the control group, the data does not suggest a correlation between participation and hiring rates. Farmers in the region reported hiring an average of 10 temporary and six part-time workers per farm.<sup>15</sup>

### **In some cases, C.A.F.E. Practices participants claimed to provide more benefits to hired labor.**

In Huehuetenango, 20% of small farmers who reported hiring temporary workers said that they offer paid sick leave, and 35% said that they pay or negotiate for leave not taken. In both cases the difference between the C.A.F.E. Practices group and the control group was statistically significant. 38% of small farmers in the region who hire part-time workers also reported paying or negotiating for leave not taken by part-time workers. This is also a statistically significant difference from rates reported by the control group.

In Jalapa, 45% of small farmers participating in C.A.F.E. Practices who reported hiring temporary workers said they provided paid sick leave to these workers. The difference in performance between C.A.F.E. Practices participants and the control group were statistically significant.

For all other benefits (e.g. paid vacation, retirement pension or housing), the number of farmers who reported providing these benefits was too small to analyze.<sup>16</sup>

### **Wages paid by C.A.F.E. Practices farms and the control group showed no statistical difference.**

In Huehuetenango, small farmers who reported hiring temporary workers paid an average wage of 53 Quetzales per day, with a range from 30-80 Quetzales. Farmers who reported hiring part-time workers paid an average of 49 Quetzales per day, with rates ranging from 10-80 Quetzales. The difference between the distribution of wages paid by C.A.F.E. Practices farms and the control group was not statistically significant for either type of worker.

Similarly in Jalapa, small farmers who reported hiring temporary workers paid an average wage of 45 Quetzales per day, with a range from 25-120 Quetzales. Farmers who reported hiring part-time workers paid an average of 46 Quetzales per day, with a range from 25-64 Quetzales. There was no statistically significant difference between the distribution of wages paid by C.A.F.E. Practices farms and the control group in either case.<sup>17</sup>

Farmers in both regions perceived changes in the wage they paid to temporary and part-time workers to either have remained the same or increased. However, there was no statistically significant difference between the perception of change in wage between C.A.F.E. Practices participants and the control group.<sup>18</sup>

### **C.A.F.E. Practices participants are more likely to be in cooperatives that have a finance fund.**

In Huehuetenango, 84% of respondents from the C.A.F.E. Practices group who reported they were members of a cooperative said that the cooperative has a financial fund compared to only 18% of respondents in the control group. In this case the difference between the control and C.A.F.E. Practices groups showed a strong statistical difference. Findings were similar in Jalapa where 68% of respondents who reported belonging to a cooperative reported that the cooperative has a finance fund compared to 10% of respondents in the control group. Again, the results showed a strong statistical difference.<sup>19</sup>

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<sup>15</sup> Survey questions #19 and 20.

<sup>16</sup> Survey question #21.

<sup>17</sup> Survey question #22.

<sup>18</sup> Survey question #23.

<sup>19</sup> Survey question #16.



**Table 5: Percentage of farmers in cooperatives with financial funds**

Region	no	yes	N
<b>Huehuetenango</b>	<b>44%</b>	<b>56%</b>	<b>339</b>
control	82%	18%	144
C.A.F.E.	16%	84%	195
<b>Jalapa</b>	<b>57%</b>	<b>43%</b>	<b>185</b>
control	90%	10%	80
C.A.F.E.	32%	68%	105
<b>Grand Total</b>	<b>49%</b>	<b>51%</b>	<b>524</b>

**Very few small farms have workers living on-site.**

In Huehuetenango, 14% of small farmers reported having farm workers living on-site. These farms housed an average of six workers per farm for a total of 278 workers living on-site among 22 farms. In Jalapa, a lower percentage (6%) of farms reported having workers living on site. C.A.F.E. Practices participants, at 9%, had a slightly higher frequency of workers living on the site than the control group (2%). Farms in Jalapa housed an average of three workers per farm, for a total of 39 workers among 12 farms.<sup>20</sup>

**Use of pesticides is not prevalent among farmers in either the C.A.F.E. Practices or the control group.**

Very few respondents reported using pesticides. In Huehuetenango, 6% of all respondents reported using pesticides and in Jalapa 7% of all respondents reported doing so. Because so few respondents reported using pesticides, we were unable to demonstrate any relationship between pesticide use and participation in the C.A.F.E. Practices program.<sup>21</sup>

**Use of agrochemicals was not prevalent, but when used, protective equipment was not commonly available.**

A minority of farms in the Huehuetenango region – 28% - reported using agrochemicals. Among those who reported using agrochemicals, only 9% made protective equipment available to workers. The difference in rates between C.A.F.E. Practices respondents and the control group was not statistically significant in either case.

Jalapa showed similar rates of agrochemical use – with 18% of farmers reporting that they used some on their farms. Among farmers who reported using agrochemicals in Jalapa, 35% reported that protective equipment was made available for workers. Again, the difference between the C.A.F.E. Practices group and the control group was not statistically significant.<sup>22</sup>

## Environmental Responsibility

### *Environmental Management*

**C.A.F.E. Practices farms in Jalapa with management plans reported a greater increase in coffee quality.**

In Jalapa, when considering only C.A.F.E. Practices participants, farmers who indicated they have farm management plans also reported greater improvements in coffee quality than those without plans at statistically significant levels.

<sup>20</sup> Survey question #24.

<sup>21</sup> Survey question #38.

<sup>22</sup> Survey questions #40 and 41.

82% of participants with plans reported an increase in coffee quality, while just 56% of those without plans reported increases in coffee quality. Only 2% of participants with farm management plans reported a decline in coffee quality, compared to 22% of participants without plans. Survey results showed no statistically significant correlation between changes in coffee quality and farm management plans in Huehuetenango.<sup>23</sup>

## **Water**

### **Some farms in both sites reported improvements in drinking water quality some, but the difference between C.A.F.E. Practices farms and the control group was not statistically significant.**

In Huehuetenango and Jalapa, most farms reported no change in the quality of the drinking water from before C.A.F.E. Practices was implemented in the region to after. In Huehuetenango, 24% of farmers reported an improvement in quality. However, the difference between C.A.F.E. Practices participants and the control group was not statistically significant. Similarly, in Jalapa, 20% of farmers reported an increase in drinking water quality, but there was no statistically significant difference between C.A.F.E. Practices participants and the control group.<sup>24</sup>

## **Soils**

### **C.A.F.E. Practices farmers reported greater increases in coffee quality; C.A.F.E Practices farmers in Huehuetenango reported greater increases in yield.**

In Huehuetenango, roughly half of respondents from the control group reported no change in coffee quality over the past five years. Of the remaining farms surveyed, 35% reported an increase in coffee quality while 15% saw a decline. Among C.A.F.E. Practices participants, the majority (59%) reported improvements in coffee quality, while 39% reported no change and just 2% reported a decline in quality. Within the control group, 43% of respondents reported no change in yield while 33% have achieved an increase in yield and 24% have seen their yields decline. Among C.A.F.E. Practices participants, however, the majority (61%) reported an increase in yield, while 29% reported no change and 10% claimed yields had declined. In Huehuetenango, the link between participation in C.A.F.E. Practices and increases in both coffee quality and yield showed strong statistical significance.

In Jalapa, the majority of respondents from the control group (54%) reported no change in coffee quality while 33% reported an improvement in quality and 12% reported a decline. Among C.A.F.E. Practices participants, the majority (56%) reported an improvement in coffee quality, while 31% reported no change and 13% reported a decline. This suggests a statistically significant link between increasing coffee quality and participation in C.A.F.E. Practices in the region. Respondents were roughly evenly distributed among decline, no change, and increase in yield and there was no statistically significant link between yield and participation in the program in Jalapa.<sup>25</sup>

### **C.A.F.E. Practices farms reported greater declines in herbicides, pesticides, and chemical fertilizer use.**

The majority of respondents in Huehuetenango reported a decline in use of herbicides. However, C.A.F.E. Practices respondents reported decreasing herbicide use at higher rates than the control group: 87% compared to 62% of control group. These results proved to be statistically significant.

In Jalapa the trend is even stronger. The majority of all respondents in the region reported a decline in use of herbicides. However, 95% of C.A.F.E. Practices participants reported a decline in use compared to 57% of

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<sup>23</sup> Survey questions #55 and 56.

<sup>24</sup> Survey question #44.

<sup>25</sup> Survey question #48.

respondents from the control group. This suggests a statistically significant link between participation in C.A.F.E. Practices and declines in the use of herbicides.<sup>26</sup>

The majority of respondents in Huehuetenango reported a decline in use of pesticides as well. However, C.A.F.E. Practices respondents reported decreasing use at higher rates that were statistically significant: 92% compared to 70% of control group respondents.

Similarly in Jalapa, the majority of all respondents in the region reported a decline in use of pesticides. However, 91% of C.A.F.E. Practices participants reported a decline in use compared to 54% of respondents from the control group. This suggests a strong, statistically significant link between participation in C.A.F.E. Practices and declining use of pesticides.<sup>27</sup>

The majority of respondents in Huehuetenango reported no change in the use of chemical fertilizers. However, 23% of C.A.F.E. Practices participants reported decreasing use of chemical fertilizer compared to only 15% for the control group. In addition, 35% of the control group reported *increasing* chemical fertilizer use, while only 16% of respondents in the C.A.F.E. Practices group increased use. In Huehuetenango, the link between stabilization or decrease of use of chemical fertilizers and participation in C.A.F.E. Practices was statistically significant.

The trend is stronger in Jalapa. The majority of control group respondents in Jalapa reported no change in the use of chemical fertilizers while 34% reported a decline in use and 9% an increase. Among C.A.F.E. Practices participants, however, the majority (77%) reported declines in chemical fertilizer use, while 17% reported no change and 6% reported increasing use. Again, the link between declines in chemical fertilizer use and participation in C.A.F.E. Practices was statistically significant.<sup>28</sup>

We noted some variation in trends between the questions regarding pesticide, herbicide and chemical fertilizer use in this section when compared to the responses provided in the working conditions section (above). Fewer farmers reported using agrochemicals when the question was asked in relation to worker health and safety. However, when asked to describe the trend in use of agrochemicals, farmers respond in greater numbers. Some farmers may have stopped using agrochemicals entirely, but it is unclear whether this would explain the entirety of the discrepancy.

## **Habitat**

### **In Jalapa, farmers participating in C.A.F.E. Practices reported the quality of shade to be improving.**

In Jalapa, 92% of control group respondents reported no change in the quality of shade on farms while the remaining 8% of respondents reported some increase in quality of shade. On C.A.F.E. Practices farms in the region, only 31% of respondents reported no change in shade quality on farms. Nearly all of the remaining 69% of C.A.F.E. Practices participants reported improvements in shade quality, a strongly statistically significant difference from the control group.

In Huehuetenango, just over half of all respondents reported no change in the quality of shade on their farms from before C.A.F.E. Practices was implemented to after. Nearly 50% of all remaining respondents in the region reported an increase in shade quality, although the difference between C.A.F.E. Practices respondents and the control group was not statistically significant.<sup>29</sup>

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<sup>26</sup> Survey question #45.

<sup>27</sup> Survey question #46.

<sup>28</sup> Survey question #47.

<sup>29</sup> Survey question #49.

## **The quantity of natural habitat is more stable on C.A.F.E. Practices farms and in Jalapa it was of higher quality as well.**

In Jalapa, a majority of respondents from the control group (73%) reported no change in natural habitat on farms and just under half (45%) of C.A.F.E. Practices respondents reported the same. In this region, however, more clearing of natural habitat appears to be taking place. 12% of control group respondents and 15% of C.A.F.E. Practices respondents reported a decline in available natural habitat on farm. Conversely, farmers participating in C.A.F.E. Practices reported that natural habitat had increased at a higher rate, a finding that was statistically significant. Within the C.A.F.E. Practices group, 40% of farmers surveyed reported an increase in natural habitat on farms compared to just 16% of respondents from the control group. This suggests that although habitat clearing is occurring in the region, farms participating in C.A.F.E. Practices are maintaining or increasing habitat when compared to the control group.

The majority of farmers within the Jalapa control group (88%) reported that the quality of natural habitat had not changed, while on a few farms (8%) it had improved and a few others (4%) it had declined. Among farms participating in C.A.F.E. Practices, however, the majority (54%) reported an improvement in the quality of natural habitat while 40% reported no change and 5% reported a decline. This represents a strong link between improving the quality of natural habitat on farms and participation in C.A.F.E. Practices, which is statistically significant.

In comparing the regions at large, on-farm habitat appeared more stable in Huehuetenango than in Jalapa. Of all respondents in Jalapa, 14% reported a decline in habitat on farms compared to only 4% in Huehuetenango. In addition, 40% of farms in Huehuetenango reported an increase in natural habitat on farms compared to 28% of all respondents in Jalapa. This suggests a statistically significant difference in overall habitat trends between the two regions.

In Huehuetenango, 70% of respondents from the control group reported no change in quantity of natural habitat on their farms. Of the remaining 30% of farmers surveyed, 22% reported an increase and 8% a decline in natural habitat. Half of all farms participating in C.A.F.E. Practices reported increasing natural habitat on farms, while 48% reported no change and 2% reported a decline in natural habitat on their farms. This represents a statistically significant link between increasing habitat on farms and participation in C.A.F.E. Practices. In Huehuetenango, the quality of on-farm habitat is stable or has increased, but there is no statistically significant difference between farms participating in C.A.F.E. Practices and those in the control group.<sup>30</sup>

## **Farmers participating in C.A.F.E. Practices report more stable quantity of natural habitat for flora and fauna surrounding their farms.**

In Huehuetenango, the majority of respondents reported no change in the quantity of natural habitat for local flora and fauna surrounding the farm. Within the control group, 25% of respondents reported a decline in the amount of available habitat compared to only 4% of respondents from the C.A.F.E. Practices group. Conversely, 33% of C.A.F.E. Practices respondents reported an increase in available natural habitat while 21% of respondents from the control group saw an increase in available habitat. This demonstrates a strong link between farmers participating in C.A.F.E. Practices and stable or positive trends in the conservation of natural habitat surrounding farms – a link that is statistically significant.

Similarly, the majority of respondents in Jalapa reported no change in the quantity of available natural habitat surrounding the farm (55% of respondents from the C.A.F.E. Practices group and 71% of respondents from the control group). In both groups, 14% of respondents reported a decrease in available natural habitat. However, 32% of C.A.F.E. Practices participants reported an increase in available natural habitat, compared to just 14% of respondents from the control group. Although farmers reported some declines in natural habitat in this region, there

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<sup>30</sup> Survey questions #53 and 54.

is also a statistically significant link between stabilization and/or increase of available natural habitat surrounding the farm and participation in C.A.F.E. Practices.<sup>31</sup>

**C.A.F.E. Practices participants reported an increase in the birds and other species observed on farms.**

In Huehuetenango, 20% of respondents from the control group observed an increase in birds and other species on their farms. An additional 16% of respondents in the control group reported a decline and 65% report no change in the birds and other species they observed on their farms. Among C.A.F.E. Practices participants in the region, however, 43% of respondents reported an increase in species observed, 47% reported no change, and just 10% reported a decrease in the species they observed on farms. This represents a statistically significant link between participation in C.A.F.E. Practices and stabilization or increase in the number of species observed.

In Jalapa, 12% of respondents from the control group reported a decline in the number birds and other species observed on their farms, while 81% reported no change and just 7% reported an increase in species observations. Among respondents who were participants in C.A.F.E. Practices, 19% reported a decrease in observations, while 39% reported no change, and 42% reported an increase in the species observed on farms. As in Huehuetenango, there is a statistically significant link in Jalapa between participation in C.A.F.E. Practices and stabilization or increase in the number of species observed.<sup>32</sup>

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<sup>31</sup> Survey question #51.

<sup>32</sup> Survey question #52.

# Coffee Processing

## *Water*

### **C.A.F.E. Practices wet millers reported decreased water consumption.**

In Huehuetenango, most coffee processors reported no change in the quantity of water used for wet milling (69% of C.A.F.E. participants and 77% of the control group). However, a statistically significant proportion of C.A.F.E. Practices participants who did observe a change in water consumption since implementing C.A.F.E. Practices reported decreased water consumption as compared to the control group, who reported increased water consumption of wet milling operations.

Because on-farm wet milling is rare in the Jalapa study area (see page 10), too few farmers responded to this question to enable analysis.<sup>33</sup>

## *Energy and Waste Management*

### **Wet milling operations in Huehuetenango are not reusing milling waste as effectively as the control group, though they have increased reuse since joining the program.**

At least some portion of wet milling waste tends to be reused in Huehuetenango. Greater than 70% of both the C.A.F.E. Practices and control group wet processors reported reusing between 80-100% of their wet milling waste. However, nearly 20% of C.A.F.E. Practices processors reported reusing less than 20% of milling waste, compared to only 1% of control group respondents. In this case, lower levels of reuse of milling waste are linked to participation in C.A.F.E. Practices. In comparing the change in reuse of waste among the C.A.F.E. Practices participants before and after joining C.A.F.E. Practices, a statistically significant proportion of participants have increased the percentage of milling waste that is reused.<sup>34</sup>

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<sup>33</sup> Survey question #59.

<sup>34</sup> Survey question #60.

# Coffee Export Companies, Cooperatives and Protected Areas Managers in the Region

Interviews with representatives from export companies operating in the region revealed that the introduction of C.A.F.E. Practices led to new priorities for managing the coffee value chain. All of the companies reported that prior to participating in the program their priority was to increase the volume of coffee produced, but that their focus has since expanded to include social and environmental issues as well. Representatives interviewed felt that participation in C.A.F.E. Practices has led to positive changes in social conditions – especially regarding hiring practices and rules against child labor. Representatives felt that farms participating in the program offered better salaries and working conditions and noted this as one of the greatest benefits of the program in the region. When asked about perceived changes related to environmental performance, the export companies noted changes in the amount of shade-grown coffee and the level of water quality when compared to five years ago.

The export companies identified the main challenges to participating in the program as the need to motivate producers to continue participating in the program, to fulfill all of the criteria and to provide the necessary agronomic support to facilitate the program. In addition, export companies observed that achieving and maintaining the quality of coffee as required by Starbucks among their suppliers was also a challenge. We were unable to conclude from the survey results whether this challenge stemmed from the stringent coffee quality standards that Starbucks requires or from any trade-offs between the environmental sustainability requirements and coffee quality. Finally, export companies noted some challenges associated with the level of investment required for wet milling in the Guatemala – especially in the western regions of the country – to ensure waste management does not affect water quality. Exporters also noted that in some cases there were trade-offs between improving production efficiency and coffee quality.

Representatives from two large cooperative associations noted that the most significant change introduced as a result of participation in C.A.F.E. Practices was the introduction of natural resource conservation as a management priority among farmers.

Natural resource managers (e.g. protected areas managers) in the region did not have a strong awareness of the environmental and conservation components of the C.A.F.E. Practices guidelines and expressed an interest in exploring opportunities to collaborate with the various stakeholders engaged in the program. More specifically, they saw an opportunity to work with farmers participating in C.A.F.E. Practices to develop private reserves and thought the program could assist in their efforts to develop an engagement strategy for smallholder coffee producers within the two sites.

# Conclusions & Recommendations

The results of this first field survey of coffee farmers in Guatemala help identify changes in economic, social and environmental conditions on farms and their correlation to participation in C.A.F.E. Practices. While some indicators did not show any statistically significant difference between the control group and the farmers participating in the program (e.g. wages received by temporary and part-time workers), some of these trends may simply require a longer timeframe to become apparent and may become significant through future, repeated surveys. Other indicators showed a strong correlation that is supported by information gathered during interviews with cooperative associations and export companies. Key findings of statistical significance include:

- Farmers participating in C.A.F.E. Practices were more likely to invest in the conservation of biodiversity and water quality in addition to improvements in coffee production and quality. Farmers in the control group tended to invest primarily in the latter. These results were consistent across both of the survey sites.
- Participating farmers were also more likely to have greater access to government assistance and to participate in other certification programs. They were also more likely to be in cooperatives with financial funds.
- Farmers reported that meeting the waste management requirements were the greatest challenge for participating in the C.A.F.E. Practices program.
- C.A.F.E. Practices participants at both sites were more likely to realize improvements in coffee quality than the control group, and in Huehuetenango these farmers also reported improvements in yields. There was also a strong correlation between having management plans and seeing improvements in coffee quality among farms participating in C.A.F.E. Practices.
- Farmers reported no significant difference between wages paid to workers on farms participating in C.A.F.E. Practices and the control group.
- Farmers participating in C.A.F.E. Practices reported a decrease in the use of herbicides, pesticides and chemical fertilizers at higher rates than those in the control group.
- The relationship between the quality of shade on farms and participation in C.A.F.E. Practices varied by survey site. In Huehuetenango there was no relationship with C.A.F.E. Practices, whereas in Jalapa improvements in shade quality were linked to participation in the program.
- There was a strong relationship between participation in C.A.F.E. Practices and reported increases in natural habitat on farms. Farmers participating in the program were also more likely to report improvements in the quality of the habitat and to report more species observed.
- In Huehuetenango, where wet milling is more prevalent, farmers participating in the program were more likely to report a decline in water used during processing.

The survey also helped identify opportunities for the following improvements in environmental management in the region:

- Farmers in Jalapa reported higher rates of declines in natural habitat, which may warrant some further research to identify drivers behind this trend and interventions that could be undertaken to slow or reverse it.
- We also found that there are opportunities for further improvements related to waste management and reuse in Huehuetenango wet milling operations.
- Interviews with protected areas managers identified a lack of awareness about the program and a desire to



learn more about it – in particular how it could assist in the formation of private protected areas on farms and the engagement of smallholders in conservation activities.

- Export companies expressed a desire for additional training on conservation issues related to coffee production to enable them to better provide the necessary advice and assistance to producers within their supply chain participating in C.A.F.E. Practices.

Finally, our experience in implementing this survey in Guatemala showed that some farmers had difficulty responding to certain questions, especially when asked to recall what conditions were like 3-5 years ago and when questions were open-ended. This was especially true among the control group. As a result we would recommend making the following adjustments to the survey to facilitate its application in additional regions:

- Multiple versions of the survey could be developed to facilitate implementation among small farms and the control group. For instance, small farms seldom employed any full-time or part-time labor and questions might be added to ask about changes in the income and well-being of the household. Within the control group, a survey could be developed that does not reference C.A.F.E. Practices and instead asks what conditions were like the year the program began implementation in the region.
- Revise the five-point rating system used in the survey to ask farmers to report on the state of the resource at a given point in time (excellent, good, fair, poor, very poor) rather than the trend they perceived at that time (significantly increasing, increasing, staying the same, decreasing, significantly decreasing).
- Additional questions on the gender make-up of the household and labor should be added to the survey.
- Analysis of the linkage between C.A.F.E. Practices and other certification programs could be strengthened by adding a question that asks when the farmer began participating in the other programs or by simply asking what was the first program they participated in.
- The willingness of farmers to discuss certain issues varied depending on the context within which a question was asked. Analysis of response rates for different ways of asking similar questions will help to improve response rates in future surveys (e.g. more farmers reported use of pesticides within the context of soil quality than within the context of worker health).

These results are based on the perception of farmers at both survey sites and should be further validated through on-the-ground field studies and GIS analysis of forest cover change in the region. We conducted interviews with export companies, cooperative associations and protected areas managers to validate these findings, but further biological, social and GIS analyses would validate the changes in environmental conditions. We would highly recommend that Starbucks undertake another survey in the area in 3 years time to monitor and evaluate conditions on a longer-term basis, as this first study has provided a good baseline for future studies.

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# Appendices

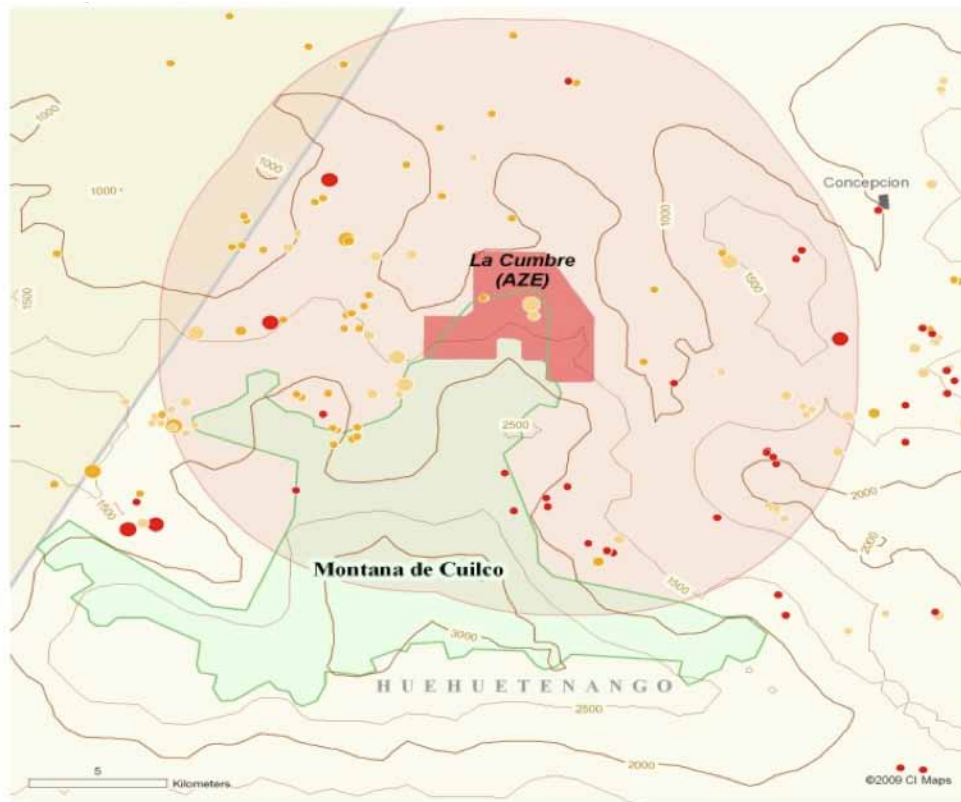
## Appendix A: Survey Questionnaire

<b>1</b>	Interviewer name
<b>2</b>	Country: Municipality: Aldea/Caserio/Canton: Location/GPS:
<b>3</b>	Farm/Estate NAME
<b>4</b>	Size:
<b>5</b>	Are you participating in the Starbucks Program (C.A.F.E. Practices)?
<b>6</b>	How long have you been participating in the Starbucks program (C.A.F.E. Practices)?
<b>7</b>	Are you participating in any other certification programs? Which ones?
<b>8</b>	How much coffee did you produce during the last crop 2008/2009? How much of that coffee (cherry/parchment) did you sell to a cooperative and/or exporter that are participating in the Starbucks Program?
<b>9</b>	What types of activities do you think you have invested in the most?
<b>10</b>	Are you receiving any government services or participating in any government programs? If yes, which ones?
<b>11</b>	Which practices have been the most difficult to apply within the Starbucks C.A.F.E. Practices program?
<b>12</b>	What benefits would you like to receive as part of the Starbucks program?
<b>13</b>	Which of the following types of incentives have you received as a participant in C.A.F.E. Practices?
<b>14</b>	How have these incentives affected your coffee farm or coffee production?
<b>15</b>	What price did you receive for your coffee during the 3 last harvests? 1 year ago (2006-2007) 2 years ago (2007-2008) 3 years ago (2008-2009)
<b>16</b>	Does the cooperative have a workers' association fund?
<b>17</b>	If yes, which types of projects have been funded?
<b>18</b>	Who carries out the labor on your farm?
<b>19</b>	Do you hire labor? How many workers do you hire per year?
<b>20</b>	How many of the following types of workers do you hire? Full-time Part-time Temporary
<b>21</b>	Which of the following benefits do you offer to full time, temporary or part-time workers? FULL TIME • Paid sick days, Paid vacation day, Payment or other compensation for vacation not taken, Retirement pension, Housing, Others TEMPORARY • Paid sick days, Paid vacation day, Payment or other compensation for vacation not taken, Retirement pension, Housing, Others PART-TIME • Paid sick days, Paid vacation day, Payment or other compensation for vacation not taken, Retirement pension, Housing, Others
<b>22</b>	What is the average daily wage paid for full-time, temporary or part-time workers? Full-time Part-time Temporary

<b>23</b>	How would you describe the changes in wages paid to full-time, temporary or part-time workers?
	Significant increase
	Increase
	Same
	Decrease
	Significant decrease
<b>24</b>	How many workers live on the farm?
<b>25</b>	How would you describe the quality of the housing provided to workers on the farm?
<b>26</b>	How would you describe the quality of the sanitary facilities on the farm?
<b>27</b>	How many children between the ages of 7 and 13 live on the farm?
<b>28</b>	How many of these children attend school?
<b>29</b>	How many teenagers live on the farm?
<b>30</b>	How many of these teenagers attend school?
<b>31</b>	Do you have any employees aged 15-18 working on the farm?
	How many?
	How many of these attend school?
<b>32</b>	How far (Kilometers) is the school from your farm?
<b>33</b>	What is the name of the school?
<b>34</b>	What changes have you seen in the education of workers and/or your family?
<b>35</b>	What type of illness is the most common on the farm?
<b>36</b>	How has this changed (e.g. type and frequency)?
<b>37</b>	What changes have you seen in the health of your family and/or workers as a result of participation in C.A.F.E. Practices?
<b>38</b>	Do you use pesticides on your farm?
<b>39</b>	If yes, how many of your workers and/or family members experienced pesticide-related illnesses in the past year?
<b>40</b>	How many of your workers apply agrochemicals?
	Which are they?
<b>41</b>	How many of these workers have the appropriate equipment to use and/or apply agrochemicals and pesticides?
	What kind of equipment to apply the agrochemical and pesticide do they have?
<b>42</b>	Do you offer training to your workers and/or others doing coffee-related work?
	What kind of training is offered?
	How often?
<b>43</b>	How would you describe the change in the water quality on your farm?
<b>44</b>	How would you describe the quality of the drinking water on the farm?
<b>45</b>	How would you describe the use of the herbicides on your farm?
<b>46</b>	How would you describe the use of the pesticides on your farm?
<b>47</b>	How would you describe the use of the chemical fertilizers on your farm?
<b>48</b>	How would you describe changes overall soil fertility and resulting productivity on your farm?
<b>49</b>	How would you describe the quality of shade cover on your farm? (species, density)
<b>50</b>	How would you describe changes in the areas where you have shade on your farm?
<b>51</b>	How would you describe the amount of natural habitat available in the area surrounding your farm?
<b>52</b>	How would you describe the number of different types of birds and other animals that you have observed on your farm?
<b>53</b>	How would you describe the amount of natural habitat available in the area surrounding your farm?
<b>54</b>	How would you describe the quality of the natural habitat provided for local flora and fauna on your farm?
<b>55</b>	What change have you seen in your coffee quality or in the production of you coffee?
<b>56</b>	Do you have a management plan for your farm?

<b>57</b>	What changes have you noticed in flora and fauna as a result of a management plan?
<b>58</b>	How would you describe the quality of the water around your farm? (upstream and downstream)?
<b>59</b>	Have you seen a change in the volume of water used for processing coffee on your farm/mill?
	If yes, how would you describe that change?
<b>60</b>	What percentages of wastes are used to improve soil quality?
<b>61</b>	Do you use renewable energy sources? What percentage? What is your source: Solar, Water, Wind, Other

## Appendix B: Maps of Sites Selected for the Survey



### Farm application status (dot size relative to farm size)

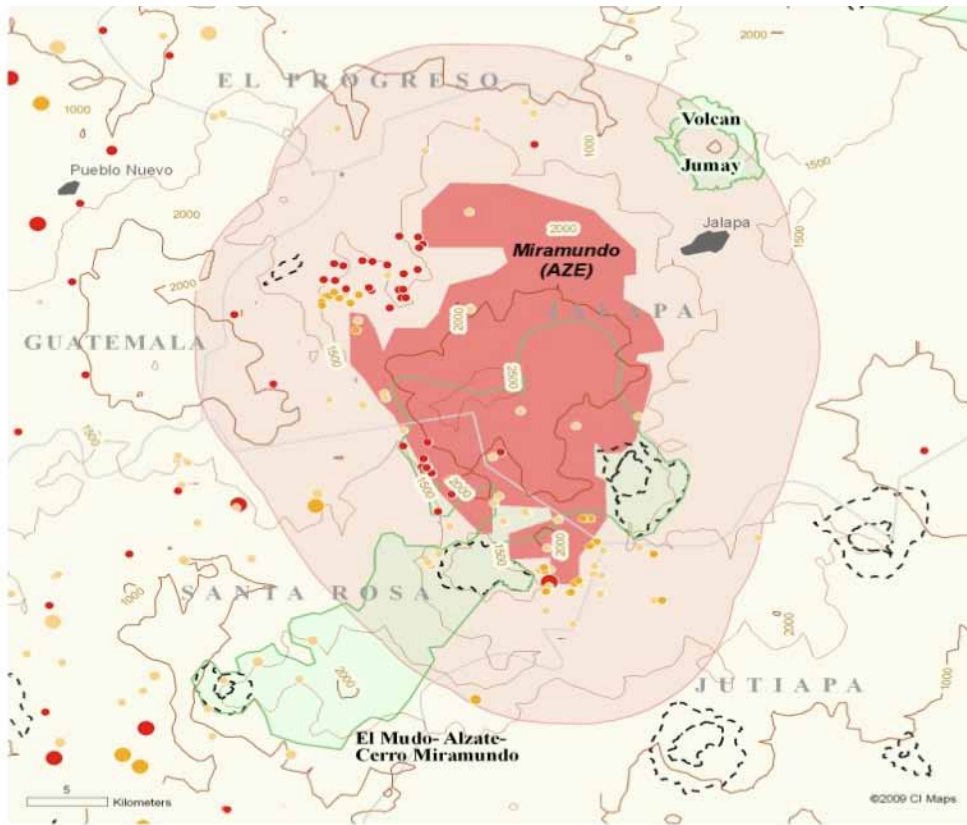
- Strategic
- Preferred
- Verified
- Non Compliant

### Conservation and contextual information

- Alliance for Zero Extinction (AZE) site
- 10km buffer
- Key Biodiversity Area (KBA)
- protected area
- town
- Departamentos
- international boundary
- 500 m interval contour line



Farms in Huehuetenango Verified under C.A.F.E. Practices in FY08



**Farm application status**  
*(dot size relative to farm size)*

- Strategic
- Preferred
- Verified
- Non Compliant

**Conservation and contextual information**

- Alliance for Zero Extinction (AZE) site
- 10km buffer
- Key Biodiversity Area (KBA)
- protected area
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Farms in Jalapa Verified under C.A.F.E. Practices in FY08

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## Survey Team

### ANACAFE

Lucrecia Rodríguez Penalba, Subgerente General

Francisco Anzueto, Director

Rosa Victoria Santiago, Cordinadora de Proyecto

Marco Tulio Duarte N. Coordinador Regional

## Consejo Nacional de Áreas Protegidas (CONAP)\*

Fernando Castro

## Altiplano Occidental/ HUEHUTENANGO\*

Oliver Hernández, Subdirector Regional

## Suroriente /JALAPA, SANTA ROSA Y JUTIAPA\*

Julio Cesar Castro, Directo Regional

## ARNPG (Asociación de Reservas Naturales Privadas de Guatemala)\*

Ing. Federico José Fahsen, President (QEPD)

## Advisors in Guatemala

Edwin J. Castellanos, Ph.D. Universidad Del Valle DirectorCentro de Estudios Ambientales

Leonel Lopez, Techno Serve/Guatemala

Mario López Rainforest Alliance, Sustainable Agriculture Division

## Starbucks

Estuardo Barrios, Independent agronomist for Starbucks Coffee Agronomy Company

## Conservation International

Miriam Castillo, Technical Coordinator

Carlos Rodriguez, Vicepresident Mexico and Central America Region

Abel Ramirez, Operations Manager

*\*Participated in interviews*