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AGRICULTURAL CERTIFICATIONS AND BEEKEEPING: LESSONS FROM AN APICULTURAL COOPERATIVE IN NORTHEASTERN EL SALVADOR, CENTRAL AMERICA

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AGRICULTURAL CERTIFICATIONS AND BEEKEEPING: LESSONS FROM AN APICULTURAL COOPERATIVE IN NORTHEASTERN EL SALVADOR, CENTRAL AMERICA

By

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ABSTRACT

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Agricultural Certifications and Beekeeping: Lessons from an Apicultural Cooperative in Northeastern El Salvador, Central America.

Chair: Dr. Jill Belsky

Beekeeping, and especially the production and sale of honey, is an on-farm diversification strategy that has significance to rural livelihoods in some of the most economically and environmentally marginalized regions of the world. Beekeeping also supports sustainable agriculture since it requires that vegetation and forest cover remain intact. However, the limited resources of beekeepers, including marketing constraints, make it difficult for them to realize the full value of their beekeeping enterprises. This professional paper focuses on the Eco-Morazán Cooperative in El Salvador as a case study to examine the costs, benefits and market potential of three types of certification schemes: 1) Fair Trade, 2) organic, and 3) Rainforest Alliance certification. The paper draws on information from existing literature, and extended field visits and informal interviews with representatives from the cooperative. It concludes with recommendations on how the cooperative can take advantage of the benefits of these certification schemes. These include suggestions for both the cooperative and Rainforest Alliance initiative, the only one of the three not currently certifying apicultural production.

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My work in El Salvador would not have been possible without support from Peace Corps El Salvador, SalvaNatura, PRODETUR, FECANM, and CONAPIS. Thank you for all of your time and effort. The list of friends and colleagues who deserve acknowledgement is too great to cover. However, I am especially grateful to Juan Pablo Dominguez for setting this project in motion. The Rio Sapo is fortunate to have an advocate like you. A number of additional individuals deserve recognition for their help in the research process for this document. I owe special thanks to Kieran Durnien and Wilma Bergman (FLO Centroamerica), Maya Spaull (TransFair USA), Oliver Bach and Ria Stout (Rainforest Alliance), Jamie Picado (BioLatina), Magnus Brättemark (Swedish Cooperative Center and FECANM), Jose Tobias Guevara (PRODETUR), Dr. Rolando Barillas (Peace Corps El Salvador), Florentine Melendez (CONAPIS), Francisco Sosa Ambrogi (CeraMiel) and Dr. Oliver Komar (SalvaNatura) for taking time out of their busy schedules to answer questions and provide feedback. To Dr. Jill Belsky, Dr. Stephen Siebert, and Dr. Kimber Haddix-McKay thank you for your support and guidance throughout my tenure as a graduate student. I am fortunate to have had a committee with such background and experience. Your confidence in me was a huge motivational force.

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CHAPTER 1. INTRODUCTION

1.1 Context

Tropical forest conservation and the livelihood security of Southern country agricultural producers have become the focus of significant global concern in recent decades (Nicholls & Opal, 2005; Rainforest Alliance, 2005). In Latin America—as with many of the world's tropical regions—rural poverty and environmental degradation are intertwined in a complex and often mutually reinforcing manner; social marginalization is both a cause and a consequence of environmental degradation (Blaikie & Brookfield, 1987). Throughout the tropical South, necessity often dictates that livelihood security be pursued at the expense of environmental conservation, a common good typically externalized and undervalued in conventional economics (Hecht, Kandel, Gomes, Cuellar, & Rosa, 2006). By definition, land degradation is a 'social' problem best addressed through social means (Blaikie & Brookfield, 1987). Therefore, efforts to reduce poverty and conserve the world's tropical diversity are more likely to succeed if the tools of globalization—the exchange of ideas, values, capital, and services across regions or borders—reach the rural poor in a just and appropriate manner (United Nations, 1992). The establishment of a trusted—and conservation oriented—link between Northern consumers and Southern producers holds promise as an effective approach (Taylor, 2005; World Wildlife Fund for Nature [WWF], 2005).

In today's global market system, agricultural certification and labeling initiatives are widely recognized as essential for Southern country small-producers to establish equitable market relations and receive a living wage for their commodity (Taylor, 2005; Murray, Raynolds & Taylor, 2003). These market-based development tools provide valuable label recognition for Southern farmers interested in entering and competing in a global economy. Many Northern consumers are willing to pay a price premium for assurance that the product they are buying lives up to their social, environmental, or quality standards. In return for certification, producers agree to follow a number of social and environmental guidelines based on international labor rights and agroecological principals and open their farm up to periodic third party audit. This provides validity to the certification schemes and guarantees consumers that the money they spend supports

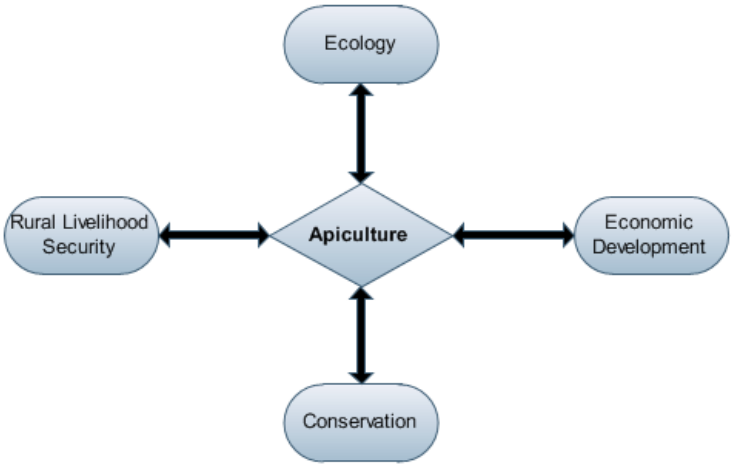
their social and environmental concerns. Certification initiatives often provide an array of producer-support services; including improved access to credit, market information, and technical training. In short, agricultural certifications seek to extend basic rights and responsibilities to all stakeholders in the global marketplace. Markets for products carrying various labels have experienced dramatic growth in recent years, up to 60% annually in some countries (Nicholls & Opal, 2005).

As with any effective approach to development, economic interests should not undermine long-term social and environmental sustainability (Chambers, 1983; Food and Agriculture Organization [FAO], 2003a). In the tropics, a major challenge for agricultural development is finding on-farm production systems that are both ecologically sensitive yet economically profitable; while still being culturally and technically appropriate for the small-farmer (Brown, 2001; Janzen, 1986). In the interest of the farmers and national economies agricultural development is most effective when promoting commodities with well established markets and high value-added potential (Chambers, 1983; FAO, 2003a). Throughout the tropics an increasing number of rural agricultural livelihoods are dependent upon supplementary forms of off-farm employment and income (Brown, 2001; Lanjouw, 2001). In addition, the predominance of rural male out-migration has created a gender division of labor and labor scarcity in many regions (Hecht *et al*., 2006). As with any 'rational' economic activity, the enterprise will not succeed if its labor or resource demands exceed its livelihood contribution. These are important considerations a farmer must bear in mind when deciding whether or not to adopt an alternative production strategy, especially a new one.

Beekeeping is an on-farm diversification strategy that has significance to rural livelihoods in some of the most economically and environmentally marginalized regions of the world (Illgner, Etienne, & Robertson, 1998; Brown, 2001). In many regions, honey production, the primary goal of most small-holder beekeepers, is a seasonal activity that can provide a secure source of income or barter for households constrained by labor, income, or food production shortfalls (FAO, 2003a). The practice is adopted in many places by women and elderly as a reliable, low-input, low-technology means of

supplementing earnings (FAO, 2003a). Major benefits of beekeeping to small-holder farmers include the fact that it requires little investment in terms of time, labor, and capital and can be readily integrated into a broader farm production system (FAO, 2003a). In many regions, beekeeping is considered one of the most sustainable forms of agriculture since if often depends upon natural vegetation and forest cover for production, versus being cleared for cultivation; and it utilizes an otherwise untapped set of resources—pollen and nectar (Beekman & Ratnieks, 2000). Beekeepers have been reported actively defending natural protected areas and conserving local habitats in some areas (Ntenga & Mugongo, 1991; Mensing, 1993). Honeybees provide an important ecological service as pollinators (Butz Huryn, 1997), and the bee's ability cover a wide distance while foraging makes apicultural management suitable to producers with little or no access to arable land (FAO, 2003a).

Figure 1. Apiculture's Socioeconomic and Ecological Positioning



In many Southern countries, beekeeping is an integrated activity (see Figure 1; adapted from Gentry, 1982) at the center of good ecology, conservation, rural livelihoods, and economic development (FAO, 2003a). The marketing potential of apicultural products contributes to its significance. Throughout the world honey is considered a high-value commodity and most regions have well established local and national markets or cooperative style export opportunities (FAO, 2003a). Additional secondary hive products can be obtained and marketed as well. They are most commonly utilized in Northern

countries and include bee pollen, propolis, royal jelly, and beeswax (FAO, 2003a). Although honey is not a primary food source, it is valued throughout the tropical South as a nutritious dietary supplement with a wide range of medicinal and curative properties (FAO, 2003a; Illgner *et al*., 1998). Beekeeping's low environmental impact, impartiality to gender, low start-up and operating costs, and role in promoting farm income diversification make it attractive as a self-reliance development tool in many Southern countries (FAO, 2003a). Such is the case in Northeastern El Salvador, where a first-level beekeeping cooperative is being formed to promote rural livelihoods and the development of a well-managed apicultural sector. These same attributes make apiculture a good fit with the sustainable development objectives of many agricultural certification initiatives.

1.2 Objectives

Subsistence agriculture is an important economic activity for most households in the Department of Morazán, El Salvador (Lanjouw, 2001, Hecht *et al*., 2006). Most households produce basic grains such as corn and beans for domestic consumption and augment their livelihoods with earnings from a range of off-farm sources (Lanjouw, 2001; Hecht *et al*., 2006). A growing number of households in this area have begun diversifying their farming practices to include small-scale honey production as a means of promoting livelihood security and income generation (Federation of Agricultural Cooperatives of Northern Morazán [FECANM], 2006). At present, most locally produced honey is sold raw directly within the community or neighboring vicinity. Markets for other hive products such as bee pollen, propolis, and royal jelly do not exist. Depending on the time of year and outlet, a honey producer in Morazán can expect to average between $2.00 and $3.00 per kilogram of pure honey (personal observation, 2006). Taking into account that this is an agrarian based economy where the average farm worker earns only $4.00 per day—a monthly salary 53.4% below the national average and the lowest paid sector in the country (Ministerio de Economía, 2005)—the sale of a bottle of honey brings a respectable return (Brown, 2001).

Estimates suggest however that Morazán's growing apicultural sector will saturate the local honey market within the next four to five years (FECANM, 2006). Over production will likely affect producer profitability and require additional investments—in terms of time, labor, and capital—in order to sell output in more regional markets. In an attempt to better manage growth in the apicultural sector the Federation of Agricultural Cooperatives of Northern Morazán (FECANM) initiated an apicultural cooperative promoting value-added hive products and high quality raw honey for wider domestic and international markets. The cooperative is registered as Eco-Morazán, S.C. de R.L. de C.V. and has been working with a Cuban apicultural health specialist on the development of a honey-based nutritional supplement, now registered as SaluMiel Forte. The cooperative is establishing a regional processing facility in the town of Jocoaitique, Department of Morazán, El Salvador. Membership is open to any sized producer.

My involvement with the Eco-Morazán Cooperative began through work in the Peace Corps El Salvador Agroforestry Program. I had been working with beekeepers from nearby farming villages for over a year when the Eco-Morazán business plan was first proposed to producers in the region. Several of the producers I worked with are now shareholders in the cooperative. In consideration of the marketing advantages of agricultural certifications shareholders expressed interest in learning more about how such initiatives might benefit the cooperative. This paper synthesizes literature on three prominent certification initiatives operating in El Salvador; it was developed in order to facilitate producer assessment of which scheme best meets their needs and organization.

Using the Eco-Morazán Cooperative, and its product development interests, as a case study this paper explores the costs, benefits, and market potential of three types of certification schemes: 1) Fair Trade, 2) organic, and 3) Rainforest Alliance certification. The investigation of each certification scheme centers on the operational structure of the initiative, the primary focus of its criteria (social, economic, or ecological), label marketing potential, associated costs, and types of production certified. This includes standards, certification procedures, and available producer support networks. Background information is provided on each certification program; including their focus

in El Salvador, national or regional representatives, and any supporting national legislation.[1]

1.3 Organization of Paper

This paper was developed primarily as a resource guide for Eco-Morazán producer assessment of agricultural certifications. It provides a general overview of each initiative in El Salvador as well as a nuts and bolts perspective into how and where they operative. The paper is organized as follows: Chapter 2 commences with a conceptual perspective of agricultural certifications then provides country specific background on El Salvador; including historical land-use and a look at the role certifications may play in adding to the amount of conservation land in the country. The chapter describes El Salvador's apicultural industry and the organizational structure and marketing interests of the Eco-Morazán Cooperative. Chapter 3 assesses the environmental risk of promoting the husbandry of *Apis mellifera scutellata* in the Neotropics and details various elements of beekeeping and apicultural output, with a focus on marketing considerations. Chapter 4 covers the Fair Trade, organic, and Rainforest Alliance certification schemes and discusses general issues relating to applicability. Chapter 5 is a comparative discussion of the relative strengths and weakness of each certification scheme and the specific challenges they present to Eco-Morazán in becoming certified.

Lastly, Chapter 6 details recommendations for both the Eco-Morazán Cooperative concerning certification and the Rainforest Alliance initiative. Regarding the latter, I have been invited to join an International Standards Committee through the Sustainable Agriculture Network to provide technical input into the development of the criteria necessary for the inclusion of beekeeping into the Rainforest Alliance certification. This is the only certification of the three not currently certifying apicultural production. Background information provided in earlier chapters gives relevance and weight to my recommendations in later sections, especially in regards to the conservation value of

[1] The marketing analysis provided in this paper is international in scope. Throughout the text, sales figures are given in both US Dollars ($) and EU Euros (€). Due to fluctuating exchange rates these figures were not standardized to a single currency. When comparing sales and market growth it is important to note the currency used and date published. Conversions should be based on date specific exchange rates.

agroforests common on the land of many small-producers and the environmental impact of apicultural production. The recommendations provided focus on the development of apicultural standards specific to the socioeconomic interests of small-holder beekeepers involved in a cooperative such as Eco-Morazán. The paper culminates with several additional considerations and challenges for certifying small-producer apiculturalists.

1.4 Methods

Information upon which this professional paper is based comes from the following methods: review of existing literature on certification, beekeeping and El Salvador; informal interviews with and field observations of producers associated with the Eco-Morazán Cooperative; two and a half years working with hillside farmers and apiculturalists in the region; and (limited) contact with those involved in certification themselves. Despite my attempts, the latter involved only a few email and phone exchanges and meetings with Fair Trade, organic, and Rainforest Alliance representatives. Independent of this specific research project, I had the opportunity to visit several Rainforest Alliance Certified coffee farms in El Salvador and a Fairtrade coffee cooperative in Chiapas, Mexico, where I translated for a Fairtrade buyer meeting with cooperative management and several small-producers. This visit included a day-long tour of participating Fairtrade Certified farms and the cooperative's processing facilities. One of my primary projects while with Peace Corps El Salvador was the design and management of an apicultural project in a nearby natural protected area. The SalvaNatura biologist supporting this project is now a shareholder in the Eco-Morazán Cooperative.

Beekeeping is a generational activity in Northern Morazán (where I was based with the Peace Corps program) but its practice has declined since pre-war estimates, before many in the region fled due to the conflict. When the region was resettled after signing of the 1992 peace accords apiculturalists were faced with a new dilemma. The beekeeping industry in El Salvador had been dependent upon European varieties of the Western honeybee. During the war, the more defensive and migratory Africanized honeybee had supplanted its European counterparts. Producers were unfamiliar with the husbandry

practices necessary for successful management of Africanized honeybees. Several farming households I spoke with abandoned the practice over concern of the bees more aggressive nature and losses in their apiary. Some said "the bees today no longer work" (personal communication, October, 2006). A Jesuit operated beekeeping cooperative based in Jocoaitique, Morazán closed operations during the war, taking with it an important regional sales outlet and extension service. Morazan's apicultural sector has gained momentum in recent years via technical trainings and promotion of apicultural practices conducive to the management of Africanized honeybees. The National Commission of Apiculture (CONAPIS) and FECANM have played important roles in recent growth.

My work with beekeepers—and my beekeeping experience—began early on during my Peace Corps service. The Peace Corps Volunteer who I replaced in *Caserío* Cumaro (a small farming village in Northern Morazán) worked to reintroduce apiculture to the community. Apiculture was promoted via the establishment of an experimental apiary, field visits, and series of workshops. Marcos Hernandez (a small-holder farmer in *Caserío* Cumaro) was central to these efforts and later acquired possession of the hives. From day one in the community I began accompanying Marcos on visits to his personal apiary and surrounding communities. Small-farmer apiculturalists throughout the watershed (approximately eight households during my service) would turn to Marcos for advice on apiary management or support in getting started. Discussions regularly covered apiculturally important plant species and the harmful effects that indiscriminate pesticide use has on foraging bees and other beneficials. These visits sparked my personal interest in beekeeping and facilitated an understanding of its benefits to small-holder households and conservation. Throughout my two and a half years of service I worked on a near weekly basis with Marcos and his honeybees, his *campesinas* as he calls them.

Mid-way through my Peace Corps service a SalvaNatura biologist involved in the management of the Río Sapo Natural Protected Area (RSNPA) approached me with the idea of promoting apiculture within the protected area, which is adjacent to Cumaro. The

project is being developed to generate income for park management and employment opportunities for apiculturalists in the watershed. Marcos' expertise and enthusiasm led him to take a lead role in the project. Via this project Marcos and I began attending monthly trainings held by CONAPIS in Morazán's departmental capital, San Francisco Gotera. For 15 months I attended these three hour meetings on a regular basis. The number and composition of apiculturalists attending these sessions varied. On average, 25 apiculturalists from Morazán were present. Many producers were consistent in their attendance. Some would attend once every two to three months. Female producers typically outnumbered male producers, approximately 55% to 45%. Ages ranged from 15 to over 65 years old. Apiculturalists involved in the Eco-Morazán Cooperative are supported by CONAPIS and I estimate that these meetings were representational of Eco-Morazán. The two CONAPIS field extensionists in the Department of Morazán are both shareholders in the cooperative.

These training sessions covered a range of issues; topics included bee health, pest and quality control measures, and business and seasonal planning. While these workshops were not geared specifically to Eco-Morazán production—or the development of this professional paper—many of the issues covered and discussed were relevant. Group discussions often centered on the challenges small-producers face when implementing improved apicultural—as well as farming—practices, often expressed in terms of land, labor, and economic constraints. CONAPIS is supported by the federal government. National level apicultural issues and constraints were commonly discussed. Producers would often work in small groups in order to complete assigned projects and facilitate group discussion. My role was that of observer and active participant, depending upon the activity. These workshops were an excellent opportunity for me to talk in small groups and one-on-one with producers. They allowed me to gain an understanding of apicultural issues throughout the department, as well as a more national level perspective. These technical trainings served as 'informal' interviews for the development of this professional paper.

A potential shortcoming of this paper is that I was not able to coordinate field-visits and formal interviews with a larger segment of cooperative shareholders. Aside from my work with Marcos Hernandez and the RSNPA apicultural project I worked in the field with six additional Eco-Morazán shareholders on a semi-regular basis, half of these producers were women managing their apiaries independently, but with their husband's consent. These visits centered on apicultural production but often included farm tours and informal discussions of livelihood strategies. These visits occurred over a single six month honey production season. The husbands of these women were met with separately. A two hour interview was conducted with the principal CONAPIS representative in Morazán. This extensionist visited our apicultural project in the RSNPA on average every three months. Discussions included the difference between managing hives in a natural forest setting versus proximal to agricultural production. An approximate two hour interview was conducted with FECANM administration regarding development of the Eco-Morazán Cooperative. Numerous informal discussions continued with FECANM personnel throughout the writing of this document. Interviews with representatives from each certification scheme and certified small-farmers were limited. This information could have provided more specific data concerning the challenges small-producers face when adopting certification schemes and greater detail of the demands of implementing necessary criteria.

Regarding the extent to which the findings in this professional paper can be extrapolated to other cooperatives it should be highlighted that this research is based on a fairly small sample of producers and limited contact with certification representatives. The development objectives and reputability of each initiative suggests that their certification criteria are stringent. However, the degree of latitude certified small-producers maintain in managing their horticultural production may be greater than my interpretation of the certification Standards. The time-frame for compliance is often site-specific and not well defined in certification material. Some of the challenges faced by the Eco-Morazán Cooperative may not hold true for producers in other parts of El Salvador. That said, via my discussions with small-producers, land management agencies, and fellow Peace Corps Volunteers and agronomists I believe many constraints will remain consistent.

El Salvador's landscape was widely altered throughout the nineteenth and twentieth centuries. Forest loss was severe on the national level. Agrarian reform implemented after the civil war redistributed a significant share of total land area to rural households throughout the country, yet these plots are well below the land area deemed necessary for poverty alleviation (Prosterman, Riedminger, & Temple, 1981; Hecht *et al.*, 2006). El Salvador is an agricultural landscape and rural population densities and poverty remain high on the national level. Although the challenges faced by small-producers vary considerably I believe there is an underlying similarity that many rural farming households in El Salvador must contend with; that of insufficient access to land and limited technical and financial resources available for promoting livelihoods.

CHAPTER 2. BACKGROUND

2.1 A Conceptual Perspective of Agricultural Certifications

Within the past two decades, agricultural certification has emerged as a valuable tool in creating market access for small-scale farmers while concurrently promoting pro-poor development and natural resource conservation (Farnworth & Goodman, 2006, Taylor, 2005). According to Bass, Thornber, Markopoulos, Roberts, and Grieg-Gran (2001, p2), certification is "a procedure by which a third party provides written assurance that a product, process or service conforms to specified standards on the basis of an audit conducted to agreed procedures". Most certification initiatives originated from consumer demand in Northern, industrialized countries and have historically focused on a set of standards aimed at promoting socioeconomic wellbeing of disadvantaged Southern producers, environmental sustainability, and/or food quality assurance (Courville, 1999; Raynolds, 2002). In recent years various agricultural certification initiatives—including the Fair Trade, organic, and the Rainforest Alliance program—have gained mainstream recognition in terms of consumer consciousness, sales volume, and land acreage under certified production.

The theory behind certifications as market-based development tools is that socially, environmentally, and quality concerned consumers will, if well-informed, translate their personal values into purchasing decisions, even if buying a product representing those attributes involves paying a slightly higher retail price (Taylor, 2005). "Producers of such products presumably receive price premiums or improved market access in exchange for the value their superior practices add to the product" (Taylor, 2005, p132).[2] These 'superior' practices typically include measures to protect the environment, improve labor conditions, and monitor chemical inputs. The theory continues that this 'ethical' consumer-producer commodity link will promote environmental and social goals in an economic system that has conventionally been heavily degrading and marginalizing for both people and the environment. The sustained growth and market-based nature of

[2] A 'price premium' is defined as the higher price margin obtained for a product over conventional market sales.

agricultural certification initiatives suggests that they may effectively augment government regulation in some countries (Moon, Florkowski, Bruckner, & Schonhof, 2002).

The effectiveness of any certification scheme to create change is integrally tied to the strength of the certification criteria and to the level of consumer trust and recognition in that label. A producer group should therefore investigate the marketing potential and status of a label for a prospective market prior to pursuing steps towards product certification (FAO, 2003b). This marketing investigation should verify that a label is licensed for use by retailers in the country where the product will be sold and, if the product is destined for export, that the certification meets the importing country's quality control standards or regulatory norms, such as the widely recognized standards for honey set by the Codex Alimentarius and European Union (FAO, 2003b). In this latter sense, a certification that has international credibility may be seen as a logistical tool facilitating product exportation and international market access.

For producers more focused on domestic consumers, the certification and monitoring process are increasingly seen as useful support networks for improving business management skills, gaining access to financing and technical training, and promoting product quality (International Fund for Agricultural Development [IFAD], 2003; Fairtrade Labeling Organization [FLO], 2004). Markets for higher quality agricultural products are growing in many Latin American countries (IFAD, 2003) and many of the quality control and sanitary measures emphasized during an inspection process will likely be deemed the domestic market norm in coming years (K. Durnien, personal communication, April 2, 2007). Further supporting these capacity building concepts is the fact that many certified producer groups have utilized skills gained via certification and the reputation of the certification itself to develop and improve trading relations within broader conventional markets (Raynolds, 2002). Some certifications actively advocate multi-market development in order to reduce producer vulnerability to market failure (FLO, 2004).

Depending on the institutional origin, a certification's criteria may be understood as promoting a specific developmental objective and trying to impact a certain productive or ecological scale (Courville, 1999). Certifications originating from a more environmental conservation background, such as the Rainforest Alliance certification scheme, tend to stress regional environmental goals and local socio-economic development over the more macro-economic change that the Fair Trade certification, which comes from the alternative trade movement, tries to promote. In contrast, organic certification, which stems from a traditional farming backdrop, tends to have a narrower farm 'production' level focus and places a higher emphasis on monitoring soil conservation practices and chemical inputs, than promoting national or regional socioeconomic and environmental goals.

The institutional roots and the scale of the social or environmental objective that the certification standards highlight influence the type of production—i.e., cooperative, plantation, or Multinational Corporation—able to register with that specific initiative. For instance, certifications stressing ecologically sustainable agricultural production, either on the farm or landscape scale, as with the organic or Rainforest Alliance certification, recognize an importance in engaging all levels of agricultural production and types of farm ownership in their certification system. Whereas, a certification initiative whose historical aim has centered on global trade reform and the empowerment of marginalized, small-scale producers will be more selective in the types of businesses it collaborates with and, accordingly, only certify products produced by democratically operated or unionized farmer groups. In this latter case, social standards and producer empowerment are the primary focus and have historically taken precedence over environmental issues.

It has been noted that small-producers are most often interested in adopting certification schemes for the label's potential to bring a higher price over conventional sales (IFAD, 2003). With this motivation, it is important to determine markets where consumer willingness-to-pay (WTP) a price premium is high. While research examining consumer preferences to pay a price differential for specific social, environmental, and quality

attributes has been limited (Moon *et al*., 2002; Loureiro & Lotade, 2005; Batte, Hooker, Haab, & Beaverson, 2007; McClusky & Loureiro, 2003; Farnworth & Goodman, 2006) many northern and central Member States of the European Union are considered most familiar with and receptive towards certified foods, especially in terms of WTP and magnitude of premium (European Commission Directorate-General for Agriculture, n.d.). Germany in particular is noted as being at the forefront of the 'green' consumer movement in Europe (Moon *et al*., 2002). For socially aware consumption the Netherlands leads the EU, with nearly one out of every two consumers claiming to have purchased a Fairtrade product (European Commission Directorate-General for Agriculture, n.d.). In the United States, growing health concerns and changing attitudes towards supporting socially and environmentally responsible companies has led to the mainstreaming of certified food products (Nicholls & Opal, 2005). One recent study found high WTP amongst U.S. consumers for processed organic products with between 70-95% certified content (Batte *et al*., 2007). Another looking at coffee certifications in the U.S. found greater consumer interest in supporting the social justice values of Fair Trade over the benefits associated with organic (Loureiro & Lotade, 2005).

Aside from national markets, WTP for various product attributes represented by the certification may vary according to type of retail outlet, label recognition, quality attribute, and demographic (Moon *et al*., 2002; Batte *et al*., 2007; McClusky & Loureiro, 2003; Farnworth & Goodman, 2006; European Commission Directorate-General for Agriculture, n.d.). In general, receptivity towards paying a price premium is greatest amongst educated consumers—three times as great in the EU as compared to groups with less formal education (European Commission Directorate-General for Agriculture, n.d.)—and ones who regularly shop at specialty grocery stores or other alternative outlets where certified products are traditionally sold (Batte *et al*., 2006). Some studies have found consumer perception of quality to be another factor influencing WTP. Although consumers generally must perceive a high eating quality in order to be willing to pay a price premium, the notion of 'quality' itself is a relative attribute that may differ according to product, country, or specific cultural tastes or concerns (McClusky & Loureiro, 2005). For example, many European and Japanese consumers view genetically

modified (GM) foods as a threat to human health and, typically, are more willing than U.S. consumers to pay a significant differential for a food label that includes non-GM (McClusky & Loureiro, 2003). Thus, consumers from different regions or backgrounds may have a different attitude towards the same labeled product (McClusky & Loureiro, 2003).

2.2 El Salvador's Agroecological Landscape

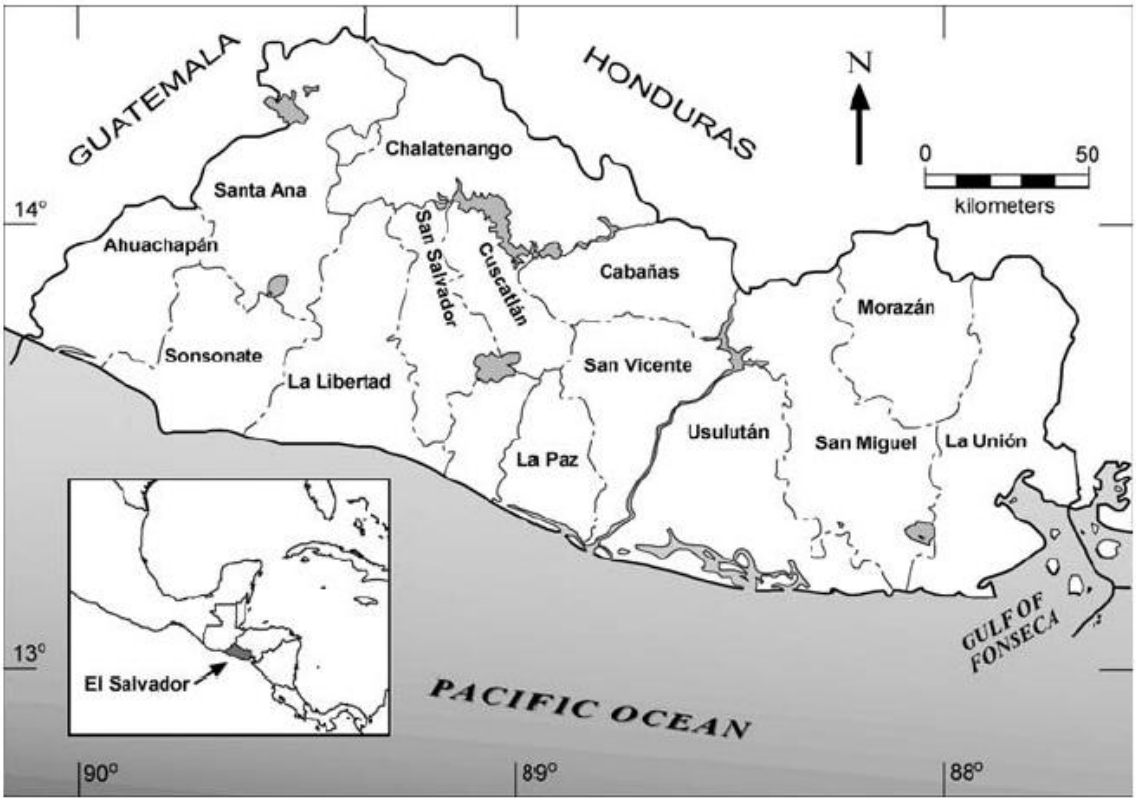


Figure 2. Map of El Salvador

El Salvador (Figure 2.) is a small (21,000 km2), highly-volcanic country located along the Pacific slope of the Central American bioregion; that narrow Mesoamerican isthmus is believed to contain 7% of the world's biota (Hecht *et al*., 2006). The country is recovering from previously high levels of deforestation, owing to concentrated land ownership, high rural population densities, and decades of an agro-export led economy that pressed the small-farmer and agricultural frontier into the country's mountainous terrain (Komar 1998; Hecht *et al*., 2006). Coffee has long dominated the country's

agricultural sector. Sales from this single export represented 95% of GDP in the 1930s (Bonner, 1984). The agricultural industry later diversified to include land degrading cotton, sugarcane, and ranching. Throughout much of the twentieth century El Salvador suffered Latin America's highest rates of landlessness, wealth disparity, and forest loss (Prosterman *et al*., 1981). By the mid-1970s, two-thirds of all arable land was in the hands of only the top ten percent and commercial agriculture accounted for 81% of foreign exchange (Bonner, 1984). A civil war erupted in 1980 that profoundly affected rural livelihoods and, during its twelve year duration, cost the country an estimated 75,000 lives. Within the first three years of the conflict the Salvadoran government had become the fourth largest recipient of U.S. economic military aid in the world (Bonner, 1984). The war led to massive out-migration and brought the commercial and peasant agricultural frontier to a standstill (Hecht *et al*., 2006).

Peace accords signed in 1992 fundamentally restructured El Salvador's political situation and agricultural economy. Due to land reforms, labor out-migration, and trade liberalization the land area under small-farmer cultivation has contracted by nearly one-third, or about 80,000 ha (Hecht *et al*., 2006). Industrial agriculture has since declined 70%, to account for only 11% of GDP today (Hecht *et al*., 2006). Agrarian reform redistributed one-fifth of the national territory to nearly a quarter of all rural households (Hecht *et al*., 2006). This tenurial patchiness has led to higher agroecological diversification at the farm and regional level, and has created 'inertia' against large scale land transformation (Hecht *et al*., 2006). Since war's end forest cover has increased significantly throughout the country, primarily in the poorer fertility montane zones previously cultivated by landless farmers and in areas abandoned when subsidies for industrial ranching and cotton were eliminated (Komar, 1998). At a time when neighboring countries were converting coffee production to full-sun, rural instability and guerilla warfare in El Salvador had precluded technical changeover in the sector (Hecht *et al*., 2006). Consequently, 85% of El Salvador's coffee is shade grown today (Hecht *et al*., 2006). These high diversity high biomass forests cover over 9% of El Salvador, and are now one of the largest 'forest types' in the country (Komar, 1998). From an ecological perspective the war has had a positive impact.

Amongst the conservation community however, land-use practices that led to the war also cleared the country of its worthwhile forests and biodiversity. The conservation discourse—privileged towards old growth stands—derogates El Salvador as the most heavily deforested country in mainland Latin America (Hecht *et al*., 2006); most articles assert that fewer than five percent of its forests remain (FAO, 2001a; Global Environment Facility [GEF] 2005). This analysis neglects the extent, value, and complexity of a highly successional and regenerating landscape. Forests in El Salvador today are a mosaic of natural, seral, and anthropogenic forest fragments. These forest patches are in varying degrees of succession and believed to cover some 60% of the country (Hecht *et al*., 2006). Impacting conservation is the fact that a mere 0.5% of El Salvador is included into any type of protected area framework (Komar, 2006); the smallest in overall area and relative to national territory of any protected area system in Central America (Rodríguez, 1998). As a result of its reputation, efforts to study and conserve biodiversity in El Salvador have received relatively little international funding and support, and the country's extant conservation value is poorly understood (Komar, 2003).

Current biological studies, impartial as they are, show that El Salvador maintains relatively high species richness: approximately 1,500 vertebrates and 2,000 plants; including over 1,000 trees (Hecht *et al*., 2006; GEF, 2005). 532 taxa of birds have been identified (GEF, 2005). Of the 23 bird species endemic to the northern Central America bioregion, 17 are still found in El Salvador (GEF 2005). Newly reported species are still being discovered (e.g., Kilian & Smalla, 2001) and it is believed that some are exclusively endemic to the country (Komar, 2002). Species extinction is significant, however, and estimated to be occurring well above natural rates. An estimated 27% of all vertebrate species are threatened or at risk of extinction (GEF, 2005; MARN, 2003), including almost half of all avifauna (Komar, 2002). According to the Ministry of Environment and Natural Resources (MARN), various species of birds, butterflies, orchids, trees, and mammals have not been reported in over a decade (GEF, 2005). Many corridors necessary for seasonal movements and biodiversity dispersal have been disrupted by habitat fragmentation (GEF, 2005). Affected by this, genetic and phenotypic diversity is reported to be in decline for some species (GEF, 2005). Habitat

loss, hunting, and wildlife trafficking are a major cause of decline for many species (Komar, 1998).

Despite widespread disturbance El Salvador remains important for conservation in Central America (Komar, 2002). The principle sanctuaries where biodiversity is still rich are small patches of forest. Most of them are secondary, successional forests and only a few years old. Throughout the country, small-holder farms with abundant fruit trees offer refuge to biodiversity and function as biological corridors (Komar, 1998). Multistoried tree and annual intercrops, or agroforests, provide a range of household and market goods as well as environmental benefits including soil and watershed protection and the sequestration of greenhouse gases (Hecht *et al*., 2006). El Salvador's extensive shade coffee forests are believed to play an important role in conserving the country's biodiversity (Hecht *et al*., 2006; Komar, 1998). These forests have likely permitted the survival of a number of forest birds by providing connections between forest fragments, thus permitting gene flow (O. Komar, personal communication, December 10, 2007). "With enough habitat patches, natural dispersal functions of wildlife transversing the landscape, and the consequential gene flow, may be conserved, at least for some species" (Komar, 2006; p153). The question then is how to maintain these areas? Formal protected area coverage is inadequate for achieving long-term biodiversity conservation. This is in part because the acreage is too small as well as the fact that human activities such as fallow-based agriculture and agroforestry are not permitted in parks and protected areas. Certification programs present an excellent opportunity for conservation of biodiversity as well as ongoing livelihood generation by permitting human uses that conserve small-habitat patches in an agroecological working landscape (Komar, 2006).

2.3 The Apicultural Industry in El Salvador

Apiculture is a productive sub-sector of the agricultural industry in El Salvador (MAG, 2005; MAG, 2007). In 2005, the apicultural sector generated $5 million in revenue (La Prensa Grafica, 2006) and provided an estimated 4,000 direct and over 20,000 indirect

employment opportunities (MAG, 2007).[3] Since 1996 the National Commission of Apiculture (CONAPIS) has been supporting apiarists and promoting modern Langstroth hive technology throughout the country. CONAPIS, a division of the Ministry of Agriculture and Livestock, represents 95% of apiarists in El Salvador and estimates that there are approximately 75,000 hives in production, managed in over 2,000 apiaries nationwide (MAG, 2007). Over half of El Salvador's apiarists are small-holders managing less than 50 colonies (Gonzalez, 2001). Langstroth hives account for an increasing proportion of national production (Guia Tecnica, No Date), and yield on average over 30 kilograms of honey per flowering season (La Prensa Grafica, 2006). Yields up to 80 kilograms, however, have been reported (Gonzalez, 2001).

With an average output between 1,500 and 3,000 metric tons per year El Salvador is the largest honey producer in Central America (MAG, 2007), roughly 0.3% of world production (Guia Tecnica, No Date).[i] El Salvador exports approximately 90% of its annual output (MAG, 2005) and generally accounts for over half of all honey exported from the Central American region (OIRSA, 2004). Of total annual production, 85% is exported raw through conventional distributors (FECANM, 2006). Germany has been the major importer of honey from Central America, including El Salvador, for the past several decades (Gonzalez, 2001). In 2005, 80% of El Salvador's total honey production was exported to Germany (MAG, 2005). On a smaller scale, El Salvador's honey is regularly exported to England, the United States, Guatemala, Honduras, and Costa Rica (MAG, 2005).

The world market price for conventional raw honey is highly volatile, in El Salvador the price exporters received per metric ton increased 54% between 2001 and 2003, to a record high of $2,500.00 per metric ton, then fell 52% again by 2005 (MAG, 2005). The price per metric ton of conventional honey averaged $1,584.00 between 1998 and 2005 (MAG, 2005). There are nine conventional honey exporters in El Salvador: Liebes, Del Pacifico, SCAES, VAPE, Don Álvaro, San Julián, Salvamiel, Joya de Ceren, Eventuales

[3] By comparison the coffee industry—the largest sector of the agricultural industry in El Salvador—provides approximately 120,000 full-time and seasonal positions (Hecht, 2006).

y P.N., and Productos Farmacéuticos (MAG, 2005). These companies purchase honey from many small-holder producers in their respective region. The conventional price small-holders received for their out-put in 2006 was $45.50 per quintal (100 pounds), equivalent to $1.00 per kilogram (Melendez, F., personal communication, 2007; FECANM, 2006).

The national market offers producers a more promising return per kilogram but limited demand. Depending upon the market, season, and relative location a small-holder producer can expect to earn $2.00 to $3.00 per kilogram of honey on the domestic market (FECANM, 2006). In El Salvador, however, annual per capita consumption of raw honey is notably low, estimated at 0.1 kilogram in 1998 (Monitor, 1998; from Gonzalez, 2001); a rate expected to increase with GDP (FAO, 2003).[ii] A modest percentage of national production is used in cottage industries; including confectionaries, natural medicine, and soap making (Guia Tecnica, No Date). Less than 10% is bottled and sold domestically in regional and local outlets (Guia Tecnica, No Date; MAG, 2005). No data is available regarding production levels and sales of additional hive products in El Salvador.

The Ministry of Agriculture and Livestock (MAG) considers the development and expansion of the apicultural sector in El Salvador to hold high potential (MAG, 2005; La Prensa, 2006; Gonzales, 2001). In conjunction with CONAPIS, MAG is promoting the implementation of international honey production standards, modernization of labs for analyzing honey quality, and niche marketing and product diversification. According to The Ministry of Agriculture's Office of Agribusiness, in order to increase profitability—and demand for skilled labor—private and cooperative apicultural interests should begin exporting honey in diverse value-added forms, and not only raw in high-volume barrels (La Prensa, 2006; Gonzales, 2001). MAG advocates the promotion of specialty makes and labels of honey for both domestic and international markets; including the bottling of honey with different components and origins, such as honey with pollen, combed honey, and uni-floral honey derived from the country's expansive 'organic' shade-coffee fincas (La Prensa, 2006; Gonzales, 2001). Focus should be directed towards improving local

capacity and product presentation, primarily in respect to bottling and manufacturing new honey-based products that utilize propolis, pollen, royal jelly, and beeswax (Gonzales, 2001).

2.4 Eco- Morazán Cooperative

The Federation of Agricultural Cooperatives of the Northern Zone of Morazán (FECANM) is a second-level social interest cooperative focused on promoting livelihood security for members of its associate cooperatives in the Northern Morazán region[4]. Their office is located in the municipality of Perquin, Department of Morazán, El Salvador. With assistance from the Swedish Cooperative Center FECANM provides direct support to thirteen first-level cooperatives plus a wide range of development projects throughout the region; including, agricultural diversification, women's and youth groups, training workshops, and *campesino a campesino*—a field based farmer-to-farmer outreach program teaching improved agroforestry and soil conservation measures (FECANM, 2007). The majority of FECANM's efforts have sought to benefit small-holder producers and communities impacted or displaced during El Salvador's civil war. In terms of agricultural diversification projects FECANM has focused the bulk of its efforts on the production of macadamia and apiculture (M. Brättemark, personal communication, September 2, 2007).

FECANM has been promoting apiculture amongst its affiliate cooperatives since 2004, with the introduction of 25 colonies of *Apis mellifera*, modern Langstroth hives, protective equipment, and training (M. Brättemark, personal communication, September 2, 2007). By 2006, FECANM cooperatives were managing 415 colonies (M. Brättemark, personal communication, September 2, 2007). During this same year, an additional 1,000 colonies were believed to be in production in Morazán (FECANM, 2006). Recent figures from CONAPIS estimate a total of 50 apiarists in the department, with an average of 28 colonies per beekeeper (FECANM, 2006). Total production in 2006 was over 35,000

[4] There are three levels of cooperatives: A first-level cooperative is an organization which has individual members affiliated, a second-level is an umbrella organization made up of two or more first level-cooperatives, and a third-level cooperative consists of two or more second-level organizations, or a cooperative of cooperatives (K. Durnien, personal communication, June 21, 2007).

bottles of honey (FECANM, 2006).[5] Current growth rates in Morazán suggest that the apicultural sector will reach 4,000 colonies by 2011, and include approximately 100 apiarists (FECANM, 2006). Within this five year period, honey production in the department is expected to surpass 100,000 bottles per year, a level far greater than projected demand in the department (FECANM, 2006).

Concurrent with introducing apiculture amongst its affiliate cooperatives FECANM began researching the feasibility of developing various value-added agricultural commodities. From an initial list of 40 ideas FECANM staff determined the production of composite apicultural products—most notably a nutritional supplement consisting of honey, bee pollen, propolis, and royal jelly—to hold the highest potential for domestic sale and profitability (M. Brättemark, personal communication, September 2, 2007). This nutritional supplement has since been registered as SaluMiel Forte. Product design has been provided by Dr. Ana Gonzalez Guerra, Director of the Apicultural Health and Research Laboratory (LARISA) in Sancti, Spíritus, Cuba. In 2006, FECANM—with support from the National University of El Salvador—developed a Business Plan for the establishment of an agribusiness cooperative specializing in the processing and distributing of raw honey and value-added apicultural products. The Eco-Morazán Cooperative was proposed to beekeepers in Morazán as an opportunity to develop a profitable apicultural industry in the region capable of participating in wider national and export markets (FECANM, 2006). The cooperative is legally registered as Eco-Morazán S.C. de R.L. de C.V. and is based in the town of Jocoaitique, Department of Morazán, El Salvador, near the border with Honduras.

Eco-Morazán is a member owned and operated for-profit beekeeping cooperative. The cooperative is apolitical and governed by an elected board of directors (M Brättemark, personal communication, June 20, 2007). Initial start-up and operating costs are being provided by the sale of an initial 100 shares—valued at $114.29 per share—and financial support from the Swedish Cooperative Center (FECANM, 2006). Stock in the company

[5] The national standard for a 'bottle' of honey is 750ml.

is open to any size producer and shareholders may purchase multiple shares; regardless of number of shares held however each member is afforded only one vote in management decisions. Producers interested in becoming shareholders may cover membership costs via the trade of honey. There are currently 33 shareholders; 17 women, 15 men, and 1 juridical member—FECANM (M. Brättemark, personal communication, June 20, 2007). The cooperative formed its board of directors in June of 2007 and is currently represented by a male majority, counter to FECANM's proposal of a board divided evenly along gender lines (M Brättemark, personal communication, June 20, 2007). The cooperative is interested in incorporating additional members but expects having to prove itself as a viable organization before reaching a wider producer base (M. Brättemark, personal communication, June 20, 2007).

Of the current shareholders, one is entirely dependent upon hired labor for production. The others manage their apiaries primarily with their own or family's labor but may hire part-time assistants during peak harvests. FECANM holds 59 shares paid for by the Swedish Cooperative Center but has only one vote. FECANM is an administrative liaison for Eco-Morazán and is not producing honey or hive products. Shareholders in Eco-Morazán will receive a minimum annual dividend of 8% on their investment and be able to sell their honey and hive products directly to the cooperative. An objective of Eco-Morazán is to compensate shareholders adequately for their apicultural output; a minimum of $2.00 per kilogram of honey and $6.00 per kilogram of pollen and propolis are proposed (FECANM, 2006). A price for royal jelly has not been determined (M. Brättemark, personal communication, June 20, 2007). No market currently exists in Morazán for the sale of pollen, propolis, or royal jelly (FECANM, 2006).

Most shareholders in the Eco-Morazán Cooperative are members of small-holder farming households (not dependent upon hired labor for agricultural production) producing staple crops—corn and beans—for domestic consumption. Most are pursuing honey production as a secondary income generating activity in order to diversify and augment their on- and off-farm livelihoods. From having worked with small-holder farmers in the region I know that they are often very conservative in their willingness to adopt 'alternative'

production strategies (i.e. soil conservation measures) into the farming practices, even if the implementation of such measures promises to improve soil productivity. Land, labor and capital constraints are major concerns for many. On the national level, one in three rural households is headed by woman (Hecht *et al*., 2006). Morazán has seen the highest rate of rural out-migration of any department in the country (Hecht *et al*., 2006). Many farmers that I worked with in the region limited their fallow periods to less than two years. Aside from participation in this cooperative, these shareholder's sell very little of their farming out-put in local or regional markets, and none are involved in export oriented production. For the near term, apicultural output would be the only aspect of their farming system utilizing a certification for marketing purposes.

The one shareholder dependent upon hired labor is a SalvaNatura biologist involved in the establishment and management of a nearby natural protected area. This apicultural production is part of an Integrated Conservation and Development project based in the dry deciduous forest of the Río Sapo Natural Protected Area (RSNPA). The project's aim is to utilize apiculture as a means of generating culturally and ecologically appropriate employment for members of the surrounding communities. The project is privately funded. A portion of proceeds from the sale of this honey will contribute to a conservation fund for the protected area. This fund is prioritized in the RSNPA Management Plan and is being utilized to purchase additional land throughout the watershed for inclusion into the protected area framework.

To insure product quality and meet international standards Eco-Morazán will monitor and assist shareholder production via an Internal Control System and regular apiary visits (FECANM, 2006). With assistance from CONAPIS the cooperative will provide several field extensionists for technical assistance (FECANM, 2006). Eco-Morazán producers have open access to modern harvesting technology; including, stainless steel centrifugal honey extractors and storage barrels, and the equipment necessary to harvest additional hive products (FECANM, 2006). The Eco-Morazán Cooperative will facilitate the transport of honey and hive products from shareholder apiary sites to the cooperative's regional processing facility in Jocoaitique, Morazán (FECANM, 2006).

According to Eco-Morazán's business plan the cooperative will focus initial efforts on the promotion of SaluMiel in domestic markets. National market potential for SaluMiel is projected to reach 120,000 units per year in five years (FECANM, 2006). Eco-Morazán intends to expand internationally thereafter. Raw honey distribution is expected to begin in El Salvador's principal peri-urban centers and, depending upon the value-added potential of certification and domestic market activity, move to export within the first several years of operation (FECANM, 2006). Depending upon marketability and projected returns the cooperative may decide against the export of raw honey if prices are deemed too low (M. Brättemark, personal communication, October 2, 2007).

For international sales, Eco-Morazán has expressed interest in developing connections with the Whole Foods Store chain in the United States, Canada, and European Union (M. Brättemark, personal communication, October 2, 2007). Eco-Morazán has contacted a cooperative in Quetzaltenango, Guatemala making hand-blown glass and is investigating the idea of selling raw honey bottled in 8 to 10 ounce hand-blown glass jars, that the consumer could later use as drinking glasses (M. Brättemark, November 26, 2007). For marketing, Eco-Morazán is working with a pharmaceutical consultant with 17 years of experience in Central America and the Caribbean, but no prior experience with value-added certifications (M. Brättemark, November 26, 2007). This consultant has suggested Eco-Morazán outsource the bottling and labeling of its products. Outsourcing will likely be pursued until the cooperative is financially and technically capable of its own processing (M. Brättemark, November 26, 2007).

CHAPTER 3. ELEMENTS OF BEEKEEPING

This chapter provides a general overview of beekeeping in the Neotropics; including the taxonomy, foraging behavior, and key issues surrounding the ecological impact of *Apis mellifera scutellata*. A calendar depicting seasonally important bee food in a community (*Caserío* Cumaro) near where the cooperative is based is included. Lastly, the hive products that are the focus of the Eco-Morazán Cooperative are described.

3.1 The Biological Order

Honey is produced and stored by hundreds of species of insect belonging to the Aculeate Hymenoptera. This is a classification that consists primarily of bees (Apidae), but includes a few genera from the wasp (Vespidae) and ant (Formicidae) families (Crane, 1999). Several characteristics shared by these species include a complex social order and a propensity to live in colonies; behavioral traits important to the collection and conversion of nectar into honey and its subsequent storage (Crane, 1999). Members of the Apidae family are native to much of the Old World of Europe, Africa, and Asia, Australia, and the Americas. Important geographical distinctions exist between the native distribution of members of the Apinae (honeybees) and Meliponinae (stingless bees) subfamily. The former consists of genera native to many temperate and tropical regions of Europe, Africa, and Asia; and which are absent in the Western Hemisphere. Species of the latter more ancestral subfamily are restricted to the tropics of both the New and Old World (Crane, 1999).

The subfamily of Apinae (honeybees) is comprised of a single genus, Apis, which consists of at least ten species native throughout Eurasia and Africa (Crane, 1999). Of these, several species are cavity nesting and characterized by a tendency to build vertical columned, multi-celled, wax combs for the storage of honey and pollen; including, *Apis mellifera* (the western honeybee) native to Europe, the Near East, and all of Africa. A. *mellifera* is the most prolific honey producer of the genus and apiculture's most economically important contributor to the global economy (Crane 1999). It is important to note that marked genetic behavioral differences, temperaments, and bioclimatic needs

exist amongst the ten regional subspecies, or races, of *Apis mellifera* (Crane, 1999). For hive management, attributes valued by beekeepers include docility, productivity, and a low rate of absconding. Subspecies exhibiting varying degrees of these traits have been introduced worldwide.

***Apis mellifera* in the Neotropics**

European strains of the Western honeybee were introduced to the New World beginning in the 1600s. Within 250 years *Apis mellifera* had been naturalized in most countries in North, Central, and South America (Crane, 1999). In the mid 1950's several dozen queens from two tropical Southern African subspecies (A. *m. scutellata* and A. *m. capensis)* were imported to Rio Claro, São Paulo state, Brazil in an effort to try and improve the temperate climate European stock (Crane 1999). The hybridized colonies demonstrated dramatically improved vigor but possessed behavioral traits characteristic of the Southern African subspecies, notably greater defensiveness and a higher rate of absconding (Crane, 1999). During the 30 years that followed A. *m. scutellata* expanded its range by up to 500 kilometers per year (Winston, 1992). A. *m. scutellata* has since displaced European races in parts of every country in Central and South America, except temperate latitude Chile, and is now the predominate parental type found throughout most of the Neotropical lowlands; the race has proven less successful at higher elevations (Spivak, 1992). Populations of *Apis m. scutellata* crossed the Panama Canal by 1981 and are believed to have colonized El Salvador in 1985, where they quickly naturalized (Winston, 1992).

In the Neotropics, *Apis mellifera scutellata* is commonly known as the Africanized Honeybee (AHB). Feral AHB colonies may divide up to 16 times per year, a reproductive pace nearly three times greater than their European counterparts and the impetus for the subspecies rapid dispersal throughout the Neotropics (Winston, 1992). This high hive division has proven both an opportunity and constraint for beekeepers in the tropical Americas. On the one hand, this propensity ensures small-holder beekeepers a widely available feral population to cull for hive management, while on the other, if not

properly managed, can significantly deplete hive strength or apiary size in the middle of the honey producing season.

Foraging Behavior of *Apis mellifera scutellata*

Like all A. *mellifera* subspecies, A. *m. scutellata* is well adapted "to edge areas where both forest vegetation and open vegetation formations are available" (Brown, 2001, p113).[iii] The AHB excels in regions characterized by "a hot climate with a long dry, but no cold season, (and) an abundant nectar and pollen flow", conditions similar to its native range (Dadant, 1976, p26). The honeybee is a generalist pollen and nectar gatherer (polylege) capable of exploiting "a substantial portion of flora both within its natural range and in areas where it has been introduced" (Butz Huryn, 1997, p276). The regional use of plants typically exceeds 100 or more species, although a smaller proportion of plant species in an area are used intensively (Butz Huryn, 1997).

Studies into the foraging distance of *Apis mellifera* show that the honeybee regularly focuses its nectar and pollen gathering within a several kilometer radius from its nest (Visscher & Seeley, 1982); European races have been shown to travel 10 kilometers or more to exploit profitable patches (Beekman & Ratnieks, 2000). Most studies indicate a much shorter foraging range for A. *m. scutellata* however (Waddington, Visscher, Herbert, & Raveret Richter, 1994; Schneider & McNally, 1993). In Costa Rica, AHB foraging activity was determined to have a mean radius of only 1200 meters (Schneider, 1989). A number of additional studies suggest a similar foraging distance in other tropical regions (Roubik, 1989; Schneider & McNally, 1993).

Average foraging distances seems to be dependent upon the profitability of floral resources in an area. Across all subspecies, honeybee field-workers prefer to move "short distances within profitable patches"—known as nearest-neighbor pollination—(Butz Huryn, 1997, p279), and foraging range is believed to decrease relative to the richness of proximal food sources (Beekman & Ratnieks, 2000). Relative to other taxa, *Apis mellifera* shows a "very high intraspecific floral constancy on single collecting trips" (Butz Huryn, 1997, p283). Mixed pollen loads typically represent less than 3% of all

pollen foraging activity (Winston, 1987). This floral fidelity, combined with the fact that the species utilizes a large foraging population and is amenable to hive management, has increased value of the species in crop pollination throughout the world (Dadant, 1976).

This ecological service is difficult to quantify but, in the United States alone commercial bee pollination is a $15 billion a year industry believed to contribute to the production of nearly one-third of the U.S. diet (Johnson, 2007). A similar proportion of the human diet is derived from insect-pollinated plants in the tropics (Crane & Walker, 1983). Tropically grown crops benefiting from honeybee pollination include avocado, cashew, coconut, coffee, macadamia, mango, melon, passion fruit, safflower, sunflower, and many varieties of citrus and banana (Bees for Development, 2007; Butz Huryn, 1997). In Panama, Roubik (2002) determined pollination by A. *m. scutellata* to augment yields of shade grown coffee (*Coffea arabica)* by over 50%. Regarding the pollination efficacy of native flora, "honey bee foraging is within the spectrum of, and does not appear to differ qualitatively from that of many other taxa" (Butz Huryn, 1997, p291).

The ecological impact of AHB populations is considered low (Butz Huryn, 1997). No evidence exists to indicate that the AHB introduction "has caused decreased population size or extinction of any native biota" (Butz Huryn, 1997, p291; Roubik & Wolda, 2001). This is especially important when recognizing that the vast majority of all flowering plants in the tropics are pollinated by invertebrates (Bawa, 1990), including many native pollinator species that have direct resource overlap with introduced honeybees (Butz Huryn, 1997). Although not shown to have population level effects, various forms of interference and exploitative competition do occur between the AHB and native pollinators (Cairns, Villanueva-G, Koptur, & Bray, 2005).

Temporary shifts in the abundance of native taxa at floral patches have been correlated to AHB presence (Roubik, 1978, Butz Huryn, 1997). The foraging activity of some native pollinator species has been shown to decline linearly with increasing AHB density (Roubik, 1978, Butz Huryn, 1997). The AHB does not aggressively exclude other species from foraging however (Roubik, 1978, Butz Huryn, 1997). This patch specific

competition is likely the result of depressed pollen and nectar availability due to the honeybee's large foraging force and efficient harvesting of floral resources (Butz Huryn, 1997). Many native taxa demonstrate a competitive release in the absence of honeybees (Roubik, 1978; Butz Huryn, 1997). During periods of dearth, the AHB has been documented robbing the honey stores of other native social bees, as well as other AHB colonies (Butz Huryn, 1997). Some researchers speculate that AHB competition compounds the affects of anthropogenic habitat fragmentation and disturbance on some native taxa, most notably in the subfamily Meliponinae (Cairns et al., 2005).[iv]

Pollinator Decline in the Neotropics

"The worldwide decline of pollinators may negatively affect the fruit set of wild and cultivated plants" (Klein, Steffan-Dewenter, & Tscharntke, 2002). With the vast majority of all flowering plant species in the tropics dependent upon insects for reproduction this decline may have implications for human wellbeing and forest succession (Bawa, 1990). Among all pollinators, bees likely constitute "the most important group in number and diversity of plant species pollinated"; bee pollination is particularly important for canopy trees (Bawa, 1990, p403). Aside from abundance and visitation rates, bee diversity is essential for maintaining pollination services (Kremen, Williams, & Thorp, 2002). In the tropics, taxa of stingless bee (Meliponinae subfamily) are the most diverse (Crane, 1999). Throughout the world, over 500 hundred species of stingless bee have been identified (Crane, 1999). Of these, three-quarters are endemic to Latin America and the Caribbean (Crane, 1999). In Central America, as in much of the world, populations of stingless bee have declined dramatically in recent decades, and some taxa are now rare (Cairns *et al*., 2005). This die-off is attributed largely to habitat loss and human interference; namely agricultural clearing and the widespread robbing of feral colonies for their honey (Cairns *et al*., 2004). Pesticide use is believed to contribute to the loss as well (Villanueva-G, Roubik, & Colli-Ucán, 2005).

In rural El Salvador, it is common for households to raid nests of stingless bees (some species) for their honey; this practice likely affects survivorship of the colony (personal observation, 2006). In addition, pesticides are often applied in a manner irrespective of

pollinator health concern (personal observation, 2006). According to a CONAPIS field agent, many farmers in the Department of Morazán do not realize the full pollination contribution that bees provide (F. Melendez, February 28, 2007). CONAPIS recommends proper timing of pesticide application; i.e. avoiding spraying during a plants flowering period or, if necessary, spraying only at times of the day when foragers are inactive and weather conditions limit drift and toxicity. Choice of pesticide also affects pollinator health, with liquid or granule applications being less harmful than dusts. Some pesticides have shorter residual effects than others. Producers are advised to use 'pura cuma' (machete only) for the control of weeds. These practices benefit all pollinators, including *Apis mellifera*.

Seasonal Availability of Melliferous Forage

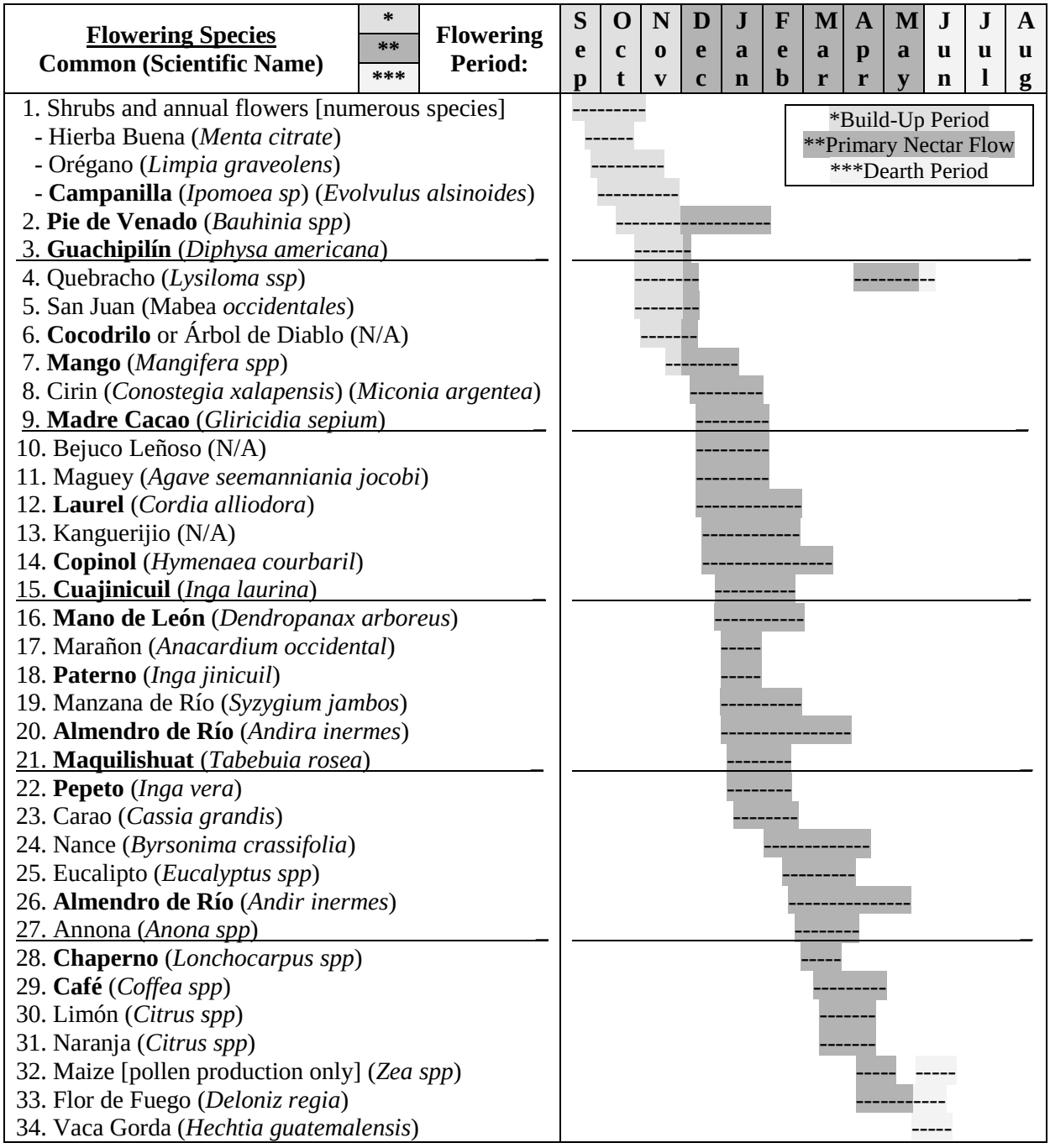
Beekeepers depend upon a diversity of melliferous forage (floral species utilized by *Apis mellifera spp* for the gathering of nectar and pollen) for apicultural production (see Figure 3 on the following page). In El Salvador, honey production begins with the onset of the dry season in November and lasts through the initial rains in May, also known as the primary nectar flow. During this period most species flower for too brief a period to contribute to multiple harvests. Producers rely upon overlap from dozens of species to maintain yields. In *Caserío* Cumaro (where I was based with Peace Corps El Salvador), there are typically three to four honey harvests in any given flowering season. These harvests often occur mid-December, late-January, late- to mid-March, and possibly one last crop in April or May, depending upon seasonal conditions. Yields typically decline as the season progresses.

Apiculturalists recognize the contribution floral diversity provides to their livelihoods; in *Caserío* Cumaro tree species play an especially important role in honey production in comparison to shrubs and herbaceous vegetation. Although it is often not economical for apiculturalists to plant tree species strictly for their melliferous value, nectar and pollen production may factor into the decision making process when choosing multipurpose species to promote on one's land (Gentry, 1982). It may be in the interest of beekeepers to promote species that flower during periods of low honey yields. The melliferous

species listed in Figure 3 provide a range of socioeconomic and ecological services in addition to nectar and pollen[6]. Particularly important services include soil protection, nutrient cycling, carbon sequestration, shade for coffee, fruit for home consumption or sale, fuel wood, building material, animal fodder, and habitat for native species.

[6] Information from which this melliferous calendar is based was gathered via discussions with farmers and apiculturalists in *Caserío* Cumaro, as well as personal observations. This list of species was compiled to direct a reforestation project taking place in the community. The idea behind this calendar was to determine and select species that could help maintain a consistent nectar flow throughout the honey producing season. Flowering species in **bold** are considered primary nectar sources by apiculturalists in the Cumaro; factors include relative abundance, timeliness of flowering, and quality of nectar produced. Foraging activity is highly visible on these species during the flowering period. Common names were cross referenced with a study produced by the Botanical Garden of El Salvador looking at floral diversity in the community and upper Río Sapo watershed. Field guides supported flowering periods for native species.

Figure 3. Melliferous Flowering Calendar (*Caserío* Cumaro, Morazán, El Salvador)



3.2 Hive Products

Apiculture is practiced on a near global scale, in both developed and developing countries. China and Argentina are two of the world's largest honey producers and exporters (Foreign Agricultural Service, 1998). Africa is the world's leader in beeswax production (FAO, 2003a). Nearly every society in human history has known and used

hive products (FAO, 2003a). In most countries, honey and beeswax are the most well known apicultural products, but bee pollen, royal jelly, and propolis are also marketable primary products. Some regions may have markets for bee venom, queens, the bees and their larva (FAO, 1996). While most hive products can be used or consumed in their original state, each has additional uses and economic potential as ingredients of another product. The profitability of most primary beekeeping products increases significantly as value-added products (FAO, 1996). Since the Eco-Morazán Cooperative is focused on the commercialization of raw honey and value-added products comprised of honey, bee-pollen, royal jelly, and propolis only these hive products will be discussed below. Eco-Morazan's utilization of modern Langstroth hives limits commercial beeswax production.

Honey

In this document honey refers to that produced by *Apis mellifera*, unless specified otherwise. According to Codex Alimentarius commercial standardization:

> "honey is the natural sweet substance produced by *honeybees* from the nectar of plants or from secretions of living parts of plants or excretions of plant sucking insects on the living parts of plants, which the bees collect, transform by combing with specific substances of their own, deposit, dehydrate, store and leave in the honeycomb to ripen and mature" (FAO, 2001b).

Honey is sold and consumed around the world. It is consumed raw (unprocessed) as well as used as an ingredient in food, cosmetics, and natural medicine; and as a source of sugar for making wine or beer (FAO, 2003a). Honey is a barter commodity, cash crop, and export crop. Honey exports contribute significantly to the agricultural economy of many developing nations (FAO, 2003a). Most developing countries are capable of exporting honey as long as national production exceeds local requirements (FAO, 2003a). In order to meet national demand, many Northern countries regularly import raw and specialized varieties of honey (FAO, 2003a). Honey is sold raw, but also combed or creamed (FAO, 1996). In the international marketplace honey is usually traded raw in 300 kg steel drums, and, to a much smaller degree, in specialty retail containers (FAO, 1996). In general, light-colored, mild flavored honeys bring the highest price. Darker

honeys are most commonly used for industrial production but their characteristic flavors bring top prices in some countries (FAO, 1996).

Honey is the major food reserve of *Apis mellifera* and the primary carbohydrate in the bee's diet; it is produced and stored in the honeycomb for consumption by the adult colony during periods of nectar dearth. Honey consists primarily of simple sugars, water, minerals, and nitrogenous compounds. Concentrated sugars account for 95 to 99% of honey's dry weight (FAO, 1996). The majority of the sugars found in honey are fructose and glucose, which represent 85 to 95% of its total sugars (FAO, 1996). The predominance of these simple sugars—especially fructose—give honey most of its nutritional and physical characteristics. The small amount of additional sugars—namely disaccharides (sucrose, maltose and isomaltose), trisaccharides, and oligosaccharides—provide information about botanical origin and, depending upon their relative abundance, adulteration (FAO, 1996). Botanical origin is important in giving different honeys their unique color, flavor, and pharmacological properties. Depending on its botanical origin honey is classified, in broad terms, as either polyfloral or unifloral. On the world market, unifloral varieties—honey produced from the nectar of a single plant species—typically have a higher value. Unifloral honeys account for a sizeable portion of Europe's premium honey market (FAO, 1996).

Quantitatively, water is honey's second most important component. Properly harvested honey is a viscous liquid with water content near 18% (Gentry, 1982). This is an important technical parameter for its commercialization since water content much higher than 18% will likely lead to fermentation; and is called 'green' or 'unripe' honey (FAO, 1996; Gentry, 1982). The final water content of honey depends on several environmental factors. Namely humidity levels in the hive during production, seasonal nectar conditions, and the timeliness of extracting the honey from the comb (FAO, 1996). As a general rule of thumb, a beekeeper should not harvest a panel of honey until at least 75% of the frame's comb contains 'sealed' honey (Gentry, 1982). Honeybees will leave a comb of stored honey unsealed until its water content has evaporated to approximately 18%. Therefore, a comb with two-thirds honey sealed for storage in the hive is a good

field indicator of ripeness. Water content can be reduced after extraction but it is a timely and costly process that may reduce honey quality.

Numerous minerals are present in honey in small quantities, the most abundant being potassium (FAO, 1996). In general, the darker the color of a honey the higher it's mineral richness (FAO, 1996). Nitrogenous compounds—primarily enzymes produced in the salivary glands of honeybees—are another important trace element found in honey. These fragile and unique enzymes are important in both the formation and commercialization of honey. From a commercialization perspective the absence or reduced presence of these compounds indicates honey which has been overheated or stored for long periods of time (FAO, 1996). These enzymes include invertase (saccharase), diastase (amylase) and glucose oxidase (FAO, 1996). Their presence is an indicator of honey freshness. Hydroxymethyfulfural (HMF)—a byproduct of fructose decay—is virtually absent in newly harvested unadulterated honey and forms during storage or excessive heating (FAO, 1996). HMF presence is an indicator of honey deterioration (FA0, 1996).

Bee pollen

Pollen is the male reproductive portion of a flower and is rich in proteins, vitamins, and minerals (FAO, 1996). It is collected by honeybees during foraging trips and transported back to the hive in the form of small pellets, carried in pollen baskets found on each hind leg of the honeybee. Pollen is stored and used as a protein source by a segment of the colony, in a partially fermented form known as 'beebread'. Young worker (nurse) bees consume beebread for the production of royal jelly which is then used in larval development, queen rearing, and feeding the adult queen. Bee pollen differs qualitatively from the fine powdery pollen on flowers. For better adhesion during transport the honeybee mixes a small amount of nectar or honey in with the pollen. Therefore, bee pollen collected during hive management differs slightly in nutritional value from floral pollen and is typically sweet in taste.

Bee pollen is harvested by a beekeeper through the use of a 'pollen trap' installed periodically over the entrance of the hive. The trap's perforated openings dislodge pollen pellets from the hind legs of returning field bees, where they subsequently fall into a secure storage tray. Pollen traps typically have an efficiency rate of 50% and the pellets should be gathered daily (FAO, 1996). Bee pollen must be properly dried and stored as soon as possible after harvesting. Moisture content can be reduced through simple drying techniques and should be below 10%—but preferably between 5 to 8%—for commercialization (FAO, 1996).

Due to the high floral fidelity of the honeybee pollen pellets typically contain pollen grains from only one or several species (FAO, 1996). Botanical origin influences the nutritional value and color of bee pollen. Bee pollen color is most frequently yellow but may also occur in red, purple, green, orange, or other colors; nutritional benefits increase with pollen source diversity (FAO, 1996). On average, bee pollen contains over ten times the level of thiamin and riboflavin found in beans and beef and most varieties contain about 30% protein (FAO, 1996). These characteristics are easily lost however with improper processing and storage. Bee pollen is a useful source of nutrition and typically bottled and sold in health food stores in urban centers (FAO, 1996, FAO, 2003a). The main issue with using bee pollen as a food ingredient is the allergic reaction many people have with pollen from a wide range of floral species (FAO, 1996). The price of bee pollen is highest in East Asia and Europe (FAO, 2003a). In some apicultural supply stores in San Salvador, an eight ounce bottle of bee-pollen retails for approximately six dollars. Organic certified bee pollen in the U.S. may retail for over double said unit price (Sunflower Organics, 2004).

Royal Jelly

Royal jelly is a pasty substance produced in the hypopharyngeal gland of young worker bees. It is extremely rich in proteins and fatty acids and is fed directly to the queen or young larva as it is secreted (FAO, 1996). The amount of royal jelly fed during the early larval stage determines whether the larva will develop into a queen or worker bee. The high fertility and long-life span of the queen bee is attributed to a diet of royal jelly. The

principle constituents of royal jelly are water, protein, sugars, lipids, and mineral salts. Proteins and sugars account for the largest fraction of dry weight. Proteins represent nearly 75% of nitrogenous substances and all amino acids essential to human health are present (FAO, 1996). Glucose and fructose account for nearly 90% of sugar content in most royal jelly and are found in similar proportions as that of honey (FAO, 1996). Many of the biological properties of royal jelly are attributed to its high lipid content; including a number of uncommon free fatty acids (Schmidt & Buchmann, 1992).

Only relatively recently has royal jelly been considered a commercial 'hive product' (FAO, 1996). Under 'normal' hive conditions, royal jelly is only 'stored' in the few cells containing larva destined for queen development and is not present in commercially viable amounts. The commercial harvesting of royal jelly is possible only through a fairly technical management technique known as 'queen rearing'. In this practice several dozen newly hatched larva are transferred from their original cells onto a grafted panel of queen-cell sized base cups. The young worker bees construct the partial queen cups, with newly deposited larva, to the appropriate dimensions of a normal queen cell and secrete less than 200 milligrams of royal jelly into each. The developing queen is removed from the cell three days later and the royal jelly extracted.

Fresh royal jelly can be sold in an unprocessed state but must remain frozen or refrigerated to extend shelf life (FAO, 2003a). The extraction process must take place under hygienic working conditions, out of direct sunlight, and with good organization. Any sized enterprise capable of meeting the above demands can commercially produce royal jelly. On an industrial scale royal jelly is typically distributed in a freeze-dried form or as a tincture (FAO, 2003a). It is also dehydrated and sold powdered. On account of royal jelly's nutritional composition and association with queen bee vitality it is sold as a dietary supplement, medicine, and aphrodisiac. It is also used in skin care products such as soap and lotion. Japan is the primary world market for commercially produced royal jelly (FAO, 2003a). Other industrialized countries import relatively small amounts (FAO, 2003a). In the U.S., 3.5 ounce jars of pure royal jelly may retail for over of $100.00 (Bee-Alive, 2006).

Propolis

Propolis is a resinous substance collected by bees from the buds of trees and other botanical sources, notably from injured areas of plants. It is dark in color, rich in volatile oils, and has a waxy, glue-like consistency. Propolis is an effective antiseptic and has been proven to kill bacteria (FAO, 2003a). Propolis is used by honeybees to weatherproof the hive and for other sanitation purposes; including sealing cracks to prevent the growth of bacteria and fungi (FAO, 2003a). It is commonly used as an ingredient in toothpaste, soaps, and ointments (FAO, 2003a). For commercial production, a slotted plastic frame is placed over the top super in the hive. Propolis is scrapped from the frame once bees have filled in the screen. Its recent global price was approximately US$10.00 per kilogram (FAO, 2003a). Three ounce bottles of organically certified propolis extract (12% propolis) retails for nearly $13.00 in the United States (Wild Bee, 2007).

CHAPTER 4. AGRICULTURAL CERTIFICATIONS

The Fair Trade, organic, and the Rainforest Alliance Certified initiatives are three of the world's largest and most well established agricultural certifications (FAO, 2003b). The certifications are being used to address rural poverty and environmental degradation in many developing countries; including El Salvador. Each initiative operates independently of any another and is established and maintained voluntarily by the producer or producer organization. Each has its own objective, scale, and requirements for obtaining certified status. All three certification systems have minimum social, economic, and environmental standards that must be met for certification.[7] The differences lie in the emphasis given to each standard. Distinctions include who may apply for certification, the scale of the audit, how and where the label may be used, and costs and profitability. This chapter covers the organizational structure, label use and markets, certification procedures and standards, and the costs, financing, and pricing structure of each labeling scheme. Factors that the Eco-Morazán Cooperative should consider when choosing a certification are highlighted below.

For the Eco-Morazán Cooperative a certification is most useful if it helps meet several production and marketing needs. Particularly important is a certification that offers a price premium and buffers producer livelihoods against market instability. The cooperative's marketing interests (raw honey and value-added apicultural products in the near term) demand a label that can be used to commercialize both single-ingredient and composite products. A certification that covers all aspects of hive production gives room for single-ingredient product diversification in the future. When considering the applicability of a certification to multi-ingredient products it is important that the cooperative find a label with leeway in terms of ingredient composition; one that can be applied to products containing both certified and non-certified ingredients would facilitate product design. The cooperative's manufacturing of products calls for a

[7] The three certification initiatives explored in this paper are members of the International Social and Environmental Accreditation and Labeling (ISEAL) Alliance. The ISEAL Alliance's goal is to strengthen the international credibility and recognition of member organization certifications in the marketplace. (www.isealalliance.org)

certification initiative whose pricing structure permits compensation for value-added processing. A label licensed for use in Northern and Southern countries allows the cooperative to promote sales in both El Salvador and abroad.

4.1 The Fairtrade Label

Fair Trade is a development approach that "aims to offer the most disadvantaged producers in developing countries the opportunity to move out of extreme poverty through creating market access (typically to Northern consumers) under beneficial rather than exploitative terms" (Nicholls & Opal 2005, p6). The Fair Trade movement recognizes conventional trade between developed and developing worlds as being based on power imbalances, market externalizations, and unruly supply chains that often act against the financial viability of small-scale producers. In order to rectify this situation Fair Trade promotes a more direct, cooperative, and equitable producer-consumer relationship. Several key practices define Fair Trade in operational terms. These include (Nicholls & Opal, 2005):

- **Agreed minimum floor price**- Often set near double the conventional market price and thus permitting the producer to cover the cost of production and be assured an actual living wage for his/her family;

- **Payment of a social premium**- this is an additional payment to the supplier above the set floor price that is to be utilized collectively by a producer group for larger community development projects. This premium is often set at 10 per cent more than the cost price of the good;

- **Direct buying from producers**- this reduces the supply chain and helps ensure that more of the final price of the product goes to the producer;

- **Long-term trading partnerships**- Fair Trade requires licensed importers to establish multi-seasonal contracts with producers in order to promote producer financial stability, transparent information flow, and more cooperative interaction;

- **Provision of credit**- Upon producer request importers must pre-finance up to 60 per cent of the total seasonal contract. This advance payment helps to smooth income streams for production and provides greater producer stability;

- **Producer support programs**- The Fairtrade Labeling Organizations International provides certified groups with access to market information, producer training, and administrative consultancy;

- **Environmental Development**- All producer groups and farms must have a natural resource management plan in operation. Producers are prohibited from using or storing certain pesticides on farm premises and organic production methods are encouraged. Genetically Modified Organisms are banned in primary production and processing.

- **Working Conditions**. These standards are based on International Labor Organization conventions and prohibit forced labor and discrimination during the production process. Children over 15 may work only if their education is not jeopardized and the task is not especially hazardous. Producer membership must not be restricted due to gender or political affiliation;

- **Farmers and workers are democratically organized**- This is the cornerstone of the Fair Trade system and the organizational structure utilized to help meet the basic objective of empowering disadvantaged producers. Fair Trade has standards for two primary types of organizations, small-holder cooperatives and wage dependent, union organized plantations. The bulk of the Fair Trade standards are applicable only to the products of small-holder cooperatives.

Organizational Structure

Fair Trade standards, certification, and promotion are managed by the Fairtrade Labeling Organizations International (FLO). The FLO is a multi-stakeholder association established in 1997 that brought various actors in the Fair Trade movement together in an effort to promote a more effective, concise, and centralized system. The FLO formed via the consolidation of 20 different Labeling Initiatives (or member organizations) operating in 15 European countries, Australia, New Zealand, Japan, Canada, Mexico (associate member) and the United States and has since expanded to include a wide range of supply-chain stakeholders (FLO, 2006a). Today the FLO is responsible for inspecting and certifying nearly 570 producer organizations in over 50 countries in Africa, Asia, and Latin America (FLO, 2006a); it represents more than 800,000 farmers, farm workers, and family members (Nicholls & Opal, 2005).

Organizationally, FLO is divided into two distinct bodies, FLO International e.V. and FLO-CERT GmbH. FLO International e.V. is a non-profit association consisting of the

20 Labeling Initiatives, registered producer groups, traders and external consultants and is focused on developing standards and facilitating market access for Southern country producer groups (FLO, 2006a). FLO-CERT GmbH is the independent certification branch of the FLO and "is a limited company that coordinates all tasks and processes all information related to the inspection and certification of producers and trade" (FLO, 2006a). FLO-CERT is based in Bonn, Germany and has operated a regional branch office in San Salvador, El Salvador.

Fairtrade Labeling Organization in El Salvador

FLO Central America employs two Liaison Officers who geographically cover operations in Belize, Guatemala, Honduras, El Salvador, Nicaragua, Costa Rica, and Panama. As part of the FLO Certification Program their primary responsibilities are to provide information, via consultation and training, to help producer groups conform to Fairtrade Standards and capitalize on market opportunities. In the Central American region FLO is currently certifying coffee, sugar, cacao, honey, cashews, banana, pineapple, and sesame. With their certification program in El Salvador, FLO Central America has expressed interest in expanding to include macadamia nuts and in certifying beekeeping cooperatives in the northeastern region of the country, including the Department of Morazán (K. Durnien, personal communication, May 2, 2007).

In the late-1990s, the FLO began certifying small-producer coffee cooperatives in El Salvador through a pilot project supported by the Danish humanitarian organization Hivos (W. Bergman, personal communication, November 7, 2007). Certification initially began with land-reform cooperatives resulting from the country's peace accords. To date, there are five coffee cooperatives and one cashew organization certified Fair Trade in the country (K. Durnien, personal communication, January 11, 2008). Certified coffee cooperatives exported over 2.5 million pounds of product in 2004 (K. Durnien, personal communication, January 11, 2008). The cashew organization has an annual production capacity of approximately 300,000 pounds; all of its produce currently goes to the European marketplace (K. Durnien, personal communication, January 11, 2008). Total

dollar figures and land area under certification in El Salvador were not readily available (K. Durnien, personal communication, January 11, 2008).

Fairtrade Label & Markets

Aside from certifying production as Fair Trade, FLO-CERT licenses traders who follow Fair Trade chain of custody criteria and buy from registered producers to use the Fairtrade label for product specific marketing purposes. Before a trader can be licensed to buy, sell, or market a product as Fairtrade a national Labeling Initiative must exist in that respective country to license the use of the Fairtrade Mark (FLO, 2004). In addition, a national Labeling Initiative must be operating a certification program in the consumer country for that specific product to be licensed (M. Spaull, personal communication, May 29, 2007).

Both of the above are important considerations for marketing and possible drawbacks for producer groups considering Fairtrade Certification or selling their product under Fair Trade conditions. Since most Labeling Initiatives are based in Northern industrialized countries very few Southern producer groups are permitted to use the Fairtrade label on products for sale domestically (FLO, 2004). In addition, potentially important Northern markets may be off-limits to Fairtrade labeled products if a country's Labeling Initiative has not launched a certification program for that particular commodity, as is currently the case with honey not being sold as a Fairtrade product in the United States. That said, TransFair USA, the U.S. based national Labeling Initiative, is currently analyzing U.S. market interest and supply availability of Fairtrade honey, and their capacity to certify honey as a Fairtrade product (M. Spaull, personal communication, May 29, 2007).

TransFair USA's preliminary market analysis is favorable for the certification of honey, especially honey that carries both the Fairtrade and organic certification (M. Spaull, personal communication, November 20, 2007). However, U.S. market potential is likely high enough to promote conventional Fairtrade Certified honey (M. Spaull, personal communication, November 20, 2007). TransFair USA has received recent inquiries from U.S. buyers interested in developing trade relations with Salvadoran honey producers (M.

Spaull, personal communication, November 20, 2007). TransFair USA expects a honey certification program to be operating by March of 2008 (M. Spaull, personal communication, November 20, 2007). This development could open valuable market opportunities for Eco-Morazán if Fairtrade Certification is pursued.

In terms of label recognition, it is apparent that consumer awareness of the Fairtrade mark is growing in many countries (Nicholls & Opal, 2005). Reflecting this consumer label confidence is the fact that global sales of goods carrying the Fairtrade label are now valued at over €1.14 billion per year (FLO, 2006b). For many products growth has been steady on both sides of the Atlantic. Certain Fairtrade goods, such as bananas and coffee, have expanded dramatically in terms of sales volume and value and are now capturing significant portions of total market shares in some countries (Nicholls & Opal, 2005). "However, in general, Fairtrade products only account for between 1 and 4 per cent of their respective markets" (Nicholls & Opal, 2005, p191).

European countries have historically recorded the highest retail sales and most rapid growth for Fairtrade products, however, the United States—still considered at an early stage of development—has quickly emerged as the world's single largest national market (Nicholls & Opal, 2005). In 2005, U.S. retail sales increased 60% from previous year figures to over €344 million (FLO, 2006b). That same year, the U.K.—the world's second largest market—generated nearly €277 million in total sales, a 35% increase from the previous year (FLO, 2006b).

Although this growth appears striking, honey as a Fairtrade product accounts for only a small fraction of total sales. This same Annual Report shows that the total sales volume of honey in 2005 was 1,331 metric tons, a sizeable 7% increase from 2004 but still relatively minor compared to other Fairtrade commodities—such as coffee or bananas, 33,992 and 103,887 metric tons, respectively. To put current global sales of Fairtrade honey into perspective, El Salvador alone often produces over double that amount on an annual basis. Economically, the most important established national markets for Fairtrade honey have been Germany, the U.K., Italy and Sweden; with Germany and the

U.K. alone accounting for well over half of all imports (FLO, 2006c). Retail sales in the U.K. have seen a steady annual increase in recent years and in 2003 were estimated to be $6.1 million for Fairtrade labeled honey (Nicholls & Opal, 2005). For Germany, sales volume figures show that it imported nearly double the U.K. amount that same fiscal year and since the late 1990's has been the world's largest buyer of Fairtrade honey (FLO, 2006c).

Focus of Fair Trade Certification & Standards

First and foremost, Fair Trade is a certification system oriented towards promoting the socioeconomic development of disadvantaged Southern small farmers and farm workers (FLO, 2005a). Two sets of Generic Fairtrade Standards have been developed—Standards for Small Farmers' Organizations and Standards for Hired Labor—in order to incorporate producers groups from various contexts into the Fairtrade system. In both cases, the Generic Fairtrade Standards provide the minimum and progress requirements that a small farmer organization or company must meet in order to be certified, and remain certified, with FLO. These requirements consider institutional criteria related to Social, Economic, and Environmental Development as well as export ability and capacity to promote Fairtrade concepts/benefits. In the case of honey production, only Small Farmers' Organizations are eligible for FLO certification, therefore only this Standards type will be considered in this document.

For an institution to be considered a Small Farmers' Organization producers must be organized as a cooperative or association democratically controlled by its members. The organization must have "a General Assembly with voting rights for all members as the supreme decision taking body and an elected Board. The staff answers through the Board to the General Assembly" (FLO, 2005a, p4). Majority membership in the organization must consist of small producers "that are not structurally dependent on permanent hired labor, managing their farm mainly with their own and their family's labor-force" (FLO, 2005a, p4). For an organization to sell a product as Fairtrade at least "50% of the volume must be produced by small producers" (FLO, 2005, p4). The organizational structure and production of Eco-Morazán would seem to be in accordance with this definition.

FECANM's ownership of majority share, however, may preclude Fair Trade certification for the cooperative (K. Durnien, personal communication, October 22, 2007). The way to test would be for Eco-Morazán to send in a listing of its members, copy of its statutes, and a free pre-application form to FLO-Cert GmbH (M. Hoepken, personal communication, November 13, 2007).

Language in the Social Development section of the Generic Standards is geared towards promoting democratic participation, transparent administration, and non-discrimination within the producer organization. The Economic Development criteria focus on organizational capacity to administer the Fairtrade premium, product quality, increasing member participation, and strengthening of business operations. The latter being imperative to the functioning of the Fairtrade system in consideration of the fact that the "FLO is responsible for ensuring that the producers on the register are viable commercial trading partners to users of the Fairtrade label" (Courville, 1999, p14). This responsibility reiterates FLO's obligation to providing effective producer support programs (Courville, 1999).

The Environmental Development criteria have recently been revised and are now promoted as being as 'equally strict' as other more environmentally oriented programs, such as the Rainforest Alliance certification (TransFair USA, 2007a). Unlike, the Rainforest Alliance Standard however, FLO criterion has some differences; including permitting the burning of agricultural lands and clearing of natural habitat for farming purposes if necessary (FLO, 2005a). FLO environmental criteria require the development of an Internal Control System in order to monitor and assess producer compliance with farm management protocol. This protocol includes proper agrochemical use and storage (with an encouragement of working towards organic production), a list of prohibited agrochemicals, the implementation of waste management and soil/water conservation measures, and a ban on genetically modified organisms (GMO's) in primary production and processing. The producer organization must identify and ensure the conservation of natural habitat areas on the farms of all affiliate members, exceptions may be made if small-holder producers have limited access to arable land (FLO, 2005a).

Internal Control System record-keeping is assessed by the monitoring liaison officer and should be updated regularly.

The FLO monitoring visit has been characterized as placing "a strong emphasis on the internal organizational structure and functioning of the producer group" (Courville, 1999, p25). During the visit the inspector searches for evidence indicating democratic control, information flows, product flow management, financial transparency, and compliance with environmental standards (Courville, 1999). The visit consists of both an administrative and field inspection. The administrative inspection focuses on cooperative management and a review of financial records, business plans and accounting systems. Since the impacts of many of the Social and Economic Development criteria are qualitative in nature the inspector conducts random interviews with farmer members in the field regarding their knowledge of Fair Trade price functioning, cooperative voting structure, and bylaws (Courville, 1999; Nicholls & Opal, 2005).

In terms of apicultural production, the Fairtrade standards and certification are currently only applicable to honey. The Fair Trade initiative does not include the production or marketing of additional hive products—such as bee pollen, royal jelly, and propolis—under its certification. To date, the Fairtrade label can not be used for the specific marketing of these products. The Fair Trade system's fixed buyer/seller relationship requires the FLO to assure adequate demand before additional commodities are included into the certification program (Nicholls & Opal, 2005). The likelihood of expanding the certification to include additional hive products however is high and is being discussed by FLO-Cert GmbH in Germany (M. Spaull, personal communication, November 20, 2007). In addition to honey and the above mentioned hive products, beeswax would also be included in this development (M. Spaull, personal communication, November 21, 2007).

For a composite product such as SaluMiel—which contains both certifiable and non-certifiable ingredients—the FLO has an established set of guidelines regulating label use. A multi-ingredient product may carry the traditional Fairtrade label if 100% of the

ingredients eligible for Fair Trade certification are Fairtrade Certified (TransFair, 2007a). The Fairtrade Certified "ingredients must constitute more than 50% of the dry weight of the product" (TransFair, 2007a). An 'Ingredient Specific' label applies to composite products when certified ingredients constitute between 1% and 50% of dry weight, but use of the 'Ingredient Specific' label must be authorized by the Labeling Initiative operating in the country of sale (TransFair, 2007a). Regulations may vary depending upon the target market, composite product, and national Labeling Initiative (TransFair, 2007; K. Durnien, personal communication, October 22, 2007). It is important to emphasize that the eligible ingredients within a composite product are what may be certified, not the 'composite product' itself (TransFair, 2007a).

Fair Trade Costs, Financing & Pricing

For an applicant group the current size of Eco-Morazán (First Grade/ Category A—less than 100 members) the inspection for initial certification consists of a total of five days, two and a half days of which the liaison officer is in the field meeting with producers and inspecting production (FLO-CERT GmbH, 2005a). The cost of initial certification for this type and category of producer organization is €2.000,00 (FLO-CERT GmbH, 2005a). The application process includes an added one time fee of €250,00 (FLO-CERT GmbH, 2005a). With the Fair Trade system all affiliated processing facilities must meet FLO standards and be certified as well. This inspection adds an additional day and €400,00 per facility employing between 10-100 workers; or €200,00 for a facility with less than 10 workers (FLO-CERT GmbH, 2005a). This could add considerable expense and complexity for Eco-Morazán if the decision were made to subcontract certain aspects of processing to outside entities rather than concentrating all manufacturing in one Eco-Morazán operated installation.

Certifications for the producer organization and processing facilities must be renewed annually. The length and cost of renewal inspection depends on the monitoring liaison officer's level of confidence in the organization's record-keeping and Internal Control System. For a First Grade/Category A Small Producer Organization complete renewal inspection is €1.575,00 and a total of four and half days (FLO-CERT GmbH, 2005a).

For organizations with accurate records and a well functioning Internal Control System a partial renewal inspection would be nearly two days shorter and cost €612,00 less (FLO-CERT GmbH, 2005a).

The FLO system used to be unique in that it was the only initiative where the producer did not pay for the monitoring and certification process. The cost of producer certification was covered via the collection of licensing fees paid by traders to use the Fairtrade Mark (Nicholls & Opal, 2005). However, this was seen as a constraint on the Fair Trade system acting against the expansion of the producer base and the development of new products. This policy was changed in 2004 (Nicholls & Opal, 2005). Certification costs are now the primary responsibility of the producer organization. To compensate for the additional cost, FLO now offers a 'Producer Certification Fund', a short-term scholarship geared towards facilitating producer organization access to the Fair Trade system and help ease financial constraints for organizations unable to cover initial inspection and renewal fees. A Small Farmers' Organization may twice receive up to 75% of the total inspection or renewal cost and applicant acceptance is competitively based (FLO, 2006d). Producer organizations are expected to cover certification fees thereafter, although some commercial partners may provide financial assistance (K. Durnien, personal communication, June 21, 2007).

Aside from the above mentioned Generic Fairtrade Standards for Small Farmers' Organization a set of product specific standards apply for honey production. Product Specific Standards offer additional Social, Economic, and Environmental Development Standards geared to production of a specific commodity; honey has no additional Development Standards specific to its production (FLO, 2005b). The Product Specific Standards also establish the Trade Standards specific to the commodity and determine product description, quality, pricing, credit and payment, and contract continuity factors. The FLO's honey standards are based on Swiss quality control criteria (FLO, 2005b).

The minimum floor price set for Fairtrade Certified honey is based on a two category point system that assesses honey quality with respect to water content (%) in one column

and Hydroxymethyfulfural level (ppm) in the other. Depending on the total number of points accrued, below a maximum of 35 points, honey is categorized into two qualities: A Quality (18 to 35 points) and B Quality (0 to 17 points). The total Fairtrade minimum pricing for A Quality honey—including the USD$0.15 per kilogram Fairtrade premium—is USD$1.95 per kilogram (FLO, 2005b). B Quality is USD$1.80 per kilogram, and includes the same USD$0.15 per kilogram premium earmarked for community development projects (FLO, 2005b). Organic certified honey includes an extra USD$0.15 per kilogram to the above mentioned total Fairtrade prices (FLO, 2005b). In the event market prices exceed the FLO minimum price for honey—the price not including the Fairtrade premium—the conventional market price applies, and the producer organization continues to receive the additional social premium. In this scenario, the guaranteed floor price remains protects certified producers from dramatic downturns in the market (Nicholls & Opal, 2005).

It should be emphasized that this pricing structure is the minimum standard that traders who enter the Fair Trade system commit to pay per kilogram. Depending on trading relations and product quality the producer organization may be able to negotiate a higher price with buyers (K. Durnien, personal communication, April 2, 2007). For raw product, buyers are not typically interested in paying above the minimum floor price but negotiating capacity improves with product differentiation, such as unifloral or organic honeys (K. Durnien, personal communication, October 22, 2007). In terms of continuity, "buyers should guarantee minimum orders for the period of at least one year. Renewals are to be effected at least three months prior to expiry" (FLO, 2005b, p4).

Eco-Morazán has expressed concern that the Fairtrade Label could not be applied to apicultural products that the cooperative itself is manufacturing and exporting to Northern countries (M. Brättemark, personal communication, October 2, 2007). According to the Category Development Manager with TransFair USA Southern country producer organizations can use the Fairtrade Label on composite products that they themselves are producing (M. Spaull, personal communication, November 20, 2007). The challenge would be finding an importer interested in buying the product at a price

representative of its value-added processing (M. Spaull, personal communication, November 20, 2007). The Fair Trade Standards assure that buyers commit to paying the minimum floor price and social premium. With a composite product, the same price per kilogram of raw product still applies. Higher unit-price negotiations—which factor in the value of manufacturing—are left to the buyer and producer organization to decide (M. Spaull, personal communication, November 20, 2007).

4.2 Organic Certification

A precise definition of organic agriculture has been a matter debate (IFAD, 2003) and, over the years, has been influenced by national governments and a multitude of private certification organizations (FAO, 1999). Most definitions however agree that organic cultivation entails an integrated use of agronomic, biological and mechanical production methods in lieu of synthetic agrochemical inputs in order to promote a more ecologically sensitive farm management system (IFAD, 2003; FAO, 2001). Often at the center of these definitions and debates is the implementation of better land husbandry techniques such as the use of green manures, crop rotations, and other soil conservation measures (FAO, 2001). According to the Food and Agriculture Organization of the United Nations, "an organic production system is designed to:

- enhance biological diversity within the whole system;
- increase soil biological activity;
- maintain long-term soil fertility;
- recycle wastes of plant and animal origin in order to return nutrients to the land, thus minimizing the use of nonrenewable resources;
- rely on renewable resources in locally organized agricultural systems;
- promote the healthy use of soil, water and air as well as minimize all forms of pollution thereto that may result from agricultural practices;
- handle agricultural products with emphasis on careful processing methods in order to maintain the organic integrity and vital qualities of the product at all stages;
- become established on any existing farm through a period of conversion, the appropriate length of which is determined by site-specific factors such as the history of the land, and type of crops and livestock to be produced" (FAO, 2001, p5).

From the consumer's perspective, organic production has often translated into an assurance that the final food product was produced in a manner supportive of the environment, respectful towards livestock, and prohibiting the use of harmful agrochemicals (FAO, 2001). The certification differs from Fair Trade in that the socioeconomics of the producers are not a high consideration. From a commercialization standpoint, organic production has seen remarkable market growth in recent years and often been associated with, although not guaranteed, bringing a valuable price premium and market advantage to the producer (IFAD, 2003). Even though a high proportion of small farmers in Latin America often produce organically by default, in the sense of having a low dependency on chemical inputs and often utilizing agroecological forms of production, use of the term 'organic' on a product label is regulated by legislation in many Northern and Southern countries and restricted to use by farms and manufacturing operations that have been certified by an accredited, third-party, certifying body (IFAD, 2003; FAO, 2001).

Organizational Structure

The organic movement worldwide consists of "a number of certification organizations that have developed comprehensive standards and techniques that minimize negative impacts, if not improve, the condition of the agricultural movement"; the biggest of these international organizations is the IFOAM—The International Federation of Organic Agricultural Movements (Courville, 1999, p3). In order to promote equivalency of standards and regulations in organic agriculture the IFOAM—a non-governmental organization consisting of 750 member organizations in 108 countries—has established a set of guidelines for organic production, processing and certification that have been adopted by a wide array of governments, producers, and international buyers (Courville, 1999).

The IFOAM sponsors an accreditation program for organic certifying bodies that are capable of meeting IFOAM Basic Standards and comply with additional Accreditation Criteria that focus on conduct in the certification process (International Federation of Organic Agricultural Movements [IFOAM], 2007a). IFOAM accreditation is carried out

and awarded by the International Organic Accreditation Service, Inc. (IOAS), an independent body associated with IFOAM that oversees implementation of the IFOAM Organic Guarantee System and administers use of the IFOAM Seal to certifying bodies that have been accredited (IFOAM, 2007a).

The IFOAM Regional Group for Latin America and Caribbean (GALCI), based in Argentina, supports regional registered producers, traders, and certifiers via networking, lobbying, and market research (IFOAM, 2007b). IFOAM criteria were used in the development of Codex Alimentarius guidelines for the production, processing, labeling and marketing of organic food standards by the Food and Agriculture Organization (IFAD, 2003). While by no means the only internationally accepted certification, production certified by organizations carrying the IFOAM Seal facilitates product recognition in the world's largest international buyer network and helps to ensure that the certification standards the production is evaluated against meet the requirements of many major importing countries (Courville, 1999).

The United States, Japan, and several member states of the European Union however maintain their own national standards and require organically labeled products sold in those countries to carry the seal of their respective national organic program (United Nations Conference on Trade and Development [UNCTAD], 2005). For example, for a product to be labeled 'organic' in the United States the producer must be accredited to carry the USDA Organic seal (Angel, 2004). Some of the more experienced organically certified producers have therefore acquired certifications from multiple certifying agencies in order to widen international market access (IFAD, 2003).

Since the1990's, Latin America has seen rapid development in the number of certifying agencies based in the region (Organic Standard, 2001). The establishment of local certifying bodies, in comparison to Northern based certification, has had the affect of lowering certification costs for producers, promoting fluent communication and "moving ownership of the certification from buyers to producers", thus providing producers with

the freedom to establish their own buyer-seller relations (Organic Standard, 2001, p8). Dozens of certifying agencies are now based in Latin America.

Although there are a number of certification agencies working in El Salvador, to date, national legislation (*Reglamento del Sistema Nacional de Acreditaciones en Materia Sanitaria y Fitosanitaria*) permitting local organizations to be accredited as national certifiers has yet to be enacted (UNCTAD, 2005). Legislation was ratified in 2004 (*Regalmento para la Produccion, Procesamiento y Certificacion de Productos Organicos*) formalizing a national standard for organic production and establishing a National Committee of Organic Agriculture. A country wide registry of organic producers, buyers, and financial lenders has also been created.

Organic Markets & Label

The global market for organic food has seen growth rates considerably above other food products (IFAD, 2003). In major markets over the past 15 years the sales of organics have grown by over 20% annually (IFAD, 2003), a trend that is expected to remain robust for coming years (IFOAM, 2007c). The global market for certified organic products was valued at €25.5 billion in 2005; figures for 2006 are expected to have reached over €30 billion (IFOAM, 2007c). Worldwide, over 31 million hectares of land are currently certified as having met organic standards and, of that global organic surface area, Latin America accounts for 19% (IFAOM, 2007c).

Expanding global interest in organics has largely been fueled by consumer concern in Northern countries, especially in the United States, European Union, and Japan, over "the risk of exposure to pesticide residues in foods and the effect of different production systems on the environment" (IFAD, 2003, p9). Although the bulk of organic production in Latin America has been geared towards exports, domestic markets in many of these countries have been growing, especially in the larger cosmopolitan areas amongst the middle and upper income segments of the population (IFAD, 2003).

Even with Northern domestic farmers having long supplied the vast majority of organic products consumed in North America and Europe studies suggest that small-scale producers in many developing countries will have strong market opportunities in helping to meet this fast growing demand (IFAD, 2003; IFOAM, 2007c). Towards this end, organic certification is increasingly being promoted by NGOs, development programs, and government agencies as a focus for rural development projects in many Latin American countries (IFAD, 2003). It is interesting to point out that "in contrast to what has characterized other export crops, small farmers have dominated organic production in Latin American countries for both export and domestic markets" (IFAD, 2003, p10).

Influencing this high proportion of Latin American small farmer involvement in organics is a noted competitive advantage that small farmers have in their transition to organic production (IFAD, 2003). Furthermore, higher net revenues and market stability over conventional crops have made the adoption of organic production more attractive for producers and consequently advanced its role as an income diversification/poverty alleviation tool (IFAD, 2003). In consideration of the above, pursuing organic certification may be an effective approach for a small producer group to secure external financial or technical assistance from development organizations (IFAD, 2003). In recent years, many producer groups seeking organic certification in Central America have received support towards the construction of processing facilities, covering of certification and monitoring costs, and market research (IFAD, 2003).

Different organic labels exist for the sale, labeling, or representation of organic products; these may differ by country, national organic program, and ingredient composition. The United States National Organic Program (n.d.) has three labels used on products containing—by weight or fluid volume—organically certified ingredients: a "100% organic" label denotes a raw or processed agricultural product that contains 100% organically certified ingredients, an "organic" label representing products with 95% organically produced raw or processed ingredients, and a "made with organic" label that may be used on multi-ingredient agricultural products which contain at least 70% organic ingredients. These different labels could provide marketing latitude for Eco-Morazán if it

diversifies its product line to include composite products containing both organic certified apicultural and non-organic agricultural-based ingredients.

Organic Agriculture in El Salvador

By 2005 El Salvador had a land area of 7,105 hectares certified under organic production, nearly a 70% increase from just a few years prior (Guzman, 2005). Coffee, cashews and sesame seeds have been the largest and most economically important sectors of organic production (Movimiento de Agricultura Orgánica de El Salvador [MAOES], 2007). Export revenues for three commodities for fiscal year 2005 amounted to over $3,767,000; of which, coffee sales accounted for 75% (MAOES, 2007). There are an estimated 1,811 producers in the country certified or in transition to organic and a 2007 Organic Producer Directory lists several honey producer organizations and private honey production enterprises currently working towards organic certification (MAOES, 2007). This same directory notes a number of nationally based sugarcane producers in transition for organic certification as well, a potentially important food reserve for organic apicultural management (BioLatina Certificadora Ecológica, n.d.).

The principle markets for Salvadoran organic exports have been the United States, the European Union and Japan (Guzman, 2005). The domestic market for the sale of organic products is poorly established but its development is considered important for improving soil conservation and water quality throughout the country (MAOES, 2007). For small farmers, domestic sales would have several key advantages over export markets. Among these would be "lower volume requirements, easier nurturing of relationships with buyers, more flexibility, and probably a wider assortment of products that could be sold" (IFAD, 2003, pXX). Signs of encouragement do exist; and include, current efforts by the Ministry of Agriculture to consolidate national actors (APRAINORES) along the organic supply chain and the establishment of the Organic Agricultural Movement of El Salvador (MAOES), a public policy and outreach group advocating organic agricultural development in the country. In addition, the University of El Salvador and the Matías Delgado University have recently developed a two and one year program, respectively, focusing on organic agriculture.

Focus of Organic Certifications & Standards

As was alluded to above, organic certification is a guarantee of the agricultural production and manufacturing process more than any assurance of the overall quality of the product itself (IFAD, 2003). General Organic Standards cover issues relating to Social, Economic, and Environmental Development, with the most comprehensive attention by far being placed on environmental criteria. Focus is given to reducing the environmental impact of the production and processing system (Courville, 1999). The environmental issues that organic standards emphasize are landscape management, ecosystem health and biological diversity, planting/regeneration and harvesting activities, and controls on chemical inputs and pest management (Courville, 1999). Social and economic criteria are typically more broadly defined than with Fair Trade certification but also include provisions on child labor, adequate wages, quality control, and producer institutional viability (Courville, 1999). In another comparison to Fair Trade, access to producer credit is not an issue considered in the organic criteria.

Apicultural standards have been developed for organic certification. These consider a number of aspects of production unique to beekeeping and focus on the control of bee origin, apiary location, hive materials, feeding regimes, hive health, and harvesting activities (BioLatina Certificadora Ecológica, n.d.). The most prominent characteristic of organic apicultural management—in terms of cost investments and difference between traditional production—is the requirement of maintaining a 3 kilometer radius between apiary location and conventional agricultural crops (BioLatina Certificadora Ecológica, n.d.). All hives must be located in an area consisting primarily of natural vegetation or other organically certified production and away from any agricultural or non-agricultural site that could cause contamination (BioLatina Certificadora Ecológica, n.d.).

Some certifying agencies operating in Latin America may permit a closer distance between apiary location and non-organic certified agriculture, as noted by a representative from FECANM who recently attended an apicultural conference in Chiapas, Mexico (M. Brättermark, personal communication, October 2, 2007). With these agencies it is important to investigate whether their certification is authorized for

use in the national market of interest. The national organic programs in Northern countries may preclude use of an organic label if it does not meet their standards.

The time and labor investment associated with managing hives at a required distance is often the largest production cost small beekeepers in Latin America will face when transitioning to organic honey production (IFAD, 2003). Several other management differences include the emphasis of using organically certified honey as the primary food source during the dearth period (or organic sugar if organic honey is not available) and the strict prohibition of chemical pesticides (BioLatina Certificadora Ecológica, n.d.). In certain circumstances, the use of natural allopathic remedies are sanctioned for curative measures against hive diseases; including menthol, thyme, eucalyptus, or camphor extract for the treatment of *Varroa jacobsoni* (BioLatina Certificadora Ecológica, n.d.).

For small producers capable of meeting the distance requirement for organic certification, the assimilation to organic honey production is considered a relatively natural and technologically straightforward transition (IFAD, 2003). Nevertheless, certifying agencies still mandate a one year conversion period from the date of the initial inspection until the certification is approved, at which point the producer is then permitted to commercialize their product with the organic label (BioLatina Certificadora Ecológica, n.d.). The certification is valid for a one year period and production must be annually re-inspected for renewal thereafter. Processing facilities must be evaluated on a yearly basis as well and certified as meeting organic standards (BioLatina Certificadora Ecológica, n.d.).

In terms of applicability to the Eco-Morazán Cooperative, however, organic certification may prove difficult for many shareholders in light of the fact that the department of Morazán has a population density of nearly 125 people per square kilometer (Ministerio de Economía, 2005), and an economy based extensively on subsistence level agriculture (Lanjouw, 2001). With organic certification though, the portions of cooperative production that do meet organic standards may be certified as long as adequate controls are implemented by the producer organization to store, process, and label organic output

apart from the other conventional production (J. Picado, personal communication, July 1, 2007). The certification covers all output from apicultural production—honey, bee pollen, propolis, royal jelly, and beeswax—and can be used both domestically and abroad (J. Picado, personal communication, October 29, 2007). The certification can be applied to composite products consisting of the above ingredients or for the marketing of each product individually (J. Picado, personal communication, October 29, 2007).

Organic Costs, Financing & Pricing

Organic certification is applicable to all forms of ownership of agricultural production, given producer capacity of meeting the organic standards. Certification is not limited to cooperatives or unionized plantations as it is with Fair Trade; nonetheless, the group certifications that exist for smallholder producer organizations require the establishment of a similar Internal Control System (ICS). In IFOAM's words, an ICS is "the part of a documented quality assurance system that allows an external certification body to delegate the periodical inspection of individual group members to an identified body or unit within the certified operator. This means that the third party certification bodies only have to inspect the well-functioning of the system, as well as to perform a few spot-check re-inspections of individual smallholders" (IFOAM, 2005).

Certification fees are often one of the most significant cost-items farmers must face when transitioning to organic production (IFAD, 2003). The total certification fee though depends heavily on a number of fixed and variable cost factors; including, the availability of in-country or regionally based certification firms (versus Northern based certification agencies), the location and dispersion of individual farms associated with the farmer organization, and the effectiveness of the Internal Control System; the lattermost of which determines the size of the farm sample the monitor must visit to assure total producer organization compliance with organic standards (IFAD, 2003). On top of these costs, many certification firms often charge "an additional variable fee calculated on the basis of the value of the producer organization output, usually between 0.5% and 1% of the gross value" (IFAD, 2003, p23).

BioLatina is a Latin American based certification agency that certifies organic apicultural production, their central headquarters is in Lima, Peru and they have regional office in Managua, Nicaragua. They are accredited by the national organic programs of the United States, Japan, Canada, and the European Union. A representative from their Nicaraguan regional office (*Ing*. Jaime Picado) was contacted regarding certification procedures and costs. The cost-breakdown provided is as follows; $30.00 application fee, $50.00 fee for the issuing of the certification, $100.00 for the annual report, and $1.05 per beehive inspected (J. Picado, personal communication, July 1, 2007). The inspection and certification of a processing facility is a supplemental charge of $400.00 (J. Picado, personal communication, July 1, 2007).

BioLatina does not charge the above mentioned fee based on a percentage of production gross value, and considers this fee an unfair tax on the producer (J. Picado, personal communication, July 1, 2007). Additional charges include transport from Nicaragua to El Salvador and subsequent apiary locations and per diem expenses for room and board (J. Picado, personal communication, July 1, 2007). Apiaries have an initial 12 month transition period until receiving organic certification and certifications must be renewed annually. The fees for certification renewal are subject to the same cost-breakdown each year.

Since accurate information is not available regarding what percentage of beekeepers associated with the Eco-Morazán Cooperative could feasibly maintain the required three kilometer radius between their apiaries and conventional crops the cost estimate for organic certification will be based on a conjectural calculation. This calculation will assume that one-fourth of the current total of 32 producers, with an average of 28 beehives per producer, could manage their apiaries the required three kilometer distance. This annual expense would amount to roughly $235.00 plus additional fees covering transportation and per diem and the $400 processing facility certification. Assuming all 32 current shareholders are able to meet the distance requirement, and managing the same average number of hives, the cost (minus transport, per diem and processing facility fees) would total $940.00 per year.

The establishment of regional organic certification firms working in El Salvador has reduced certification costs by over 30%, versus the previous dependence on having to use Northern agencies (UNCTAD, 2005). Covering these costs however is still a concern for many Salvadoran producers (UNCTAD, 2005). Assisting with this issue is a relatively new program financed by the United States Agency for International Development (USAID) that, depending on the size of the business, provides up to 70% of the cost of certification in El Salvador (UNCTAD, 2005). As of 2005 over 40 businesses had begun the process of organic certification through this program (UNCTAD, 2005). Another organization that has been effective in promoting organic production in El Salvador is the National Cooperative Business Association CLUSA International Program. This organization initiated the original organic movement in El Salvador after the signing of the 1992 Peace Accords (Angel, 2004). More recently, the CLUSA International Program has helped organic cooperatives "to obtain grant funds from the Inter-American Foundation to build packaging and storage facilities (IFAD, 2003, p25).

In terms of the prices organic honey producers receive for their output it should be stressed that although a price premium (the higher price margin obtained over conventional production) is often associated with organic production the organic certification itself does not assure that the producer will receive a higher price. The possibility that organic price premiums will decline as global supply increases and new consumers enter the market who are less willing to pay high price margins has been one of the primary critiques against promoting organic certification in developing countries as a poverty alleviation tool (IFAD, 2003; FAO, 2001). That said, organic certification has traditionally led to greater profitability for small scale producers and access to a more stable market (IFAD, 2003).

A study looking at relative profitability and labor investments of pre- and post-organic certification honey producer profitability in Southern Mexico reported a wide range of profit margins received by organic producer groups. One producer group experienced a 45% increase in profit per ton of exported organic honey from previous conventional market prices of $1,100 per ton (IFAD, 2003). This dramatic profit increase was accrued

with a relatively minor 3.3% increase in labor cost per kilogram of honey that was invested above prior conventional management estimates (IFAD, 2003). It is worth mentioning that this 3.3% labor increase was not due to any significant technological change in hive management but was related to added travel time needed for producers to get to and from the more distant apiary locations (IFAD, 2003).

Less dramatic than the aforementioned increase is another honey producing association in the region that reported having been able to pay its members 13.5% more per kilogram of honey ($0.84/kg) than before becoming organically certified (IFAD, 2003). The organic producers that were also Fairtrade Certified reported an 81% increase per ton of honey sold in the Fair Trade market in comparison to their earlier conventional prices (IFAD, 2003). Many of these lattermost producers were able to receive a price premium for their honey still in the transitional period to organic because they were also selling output in the Fair Trade market (IFAD, 2003). Prices for organically certified hive products other than honey are not readily available. No variation in honey yields was experienced between conventional and organic production systems (IFAD, 2003). The lack of a guaranteed price premium, combined with the fees for certification, raises questions for Eco-Morazán of whether organic certification alone would be cost prohibitive.

4.3 Rainforest Alliance Certified Seal of Approval

The Rainforest Alliance Certified seal of approval was created in response to the threats agricultural production and expansion and pose to the world's remaining tropical forests and biodiversity (Rainforest Alliance, 2007a, para 1). The certification has its roots in the Rainforest Alliance's well known SmartWood program, accredited through the Forest Stewardship Council to certify responsible forestry practices, and evolved out of the ECO-OK label, developed in the early 1990s to improve the environmental and human impact of the rapidly growing banana industry in Latin American (Rainforest Alliance, n.d.,a). The mission of the initiative is to integrate agricultural production with the conservation of biodiversity and human development. The certification consists of a set of environmental and social standards geared towards reducing the ecological footprint of agricultural production on farms while promoting a range of social benefits for farmers

and farm workers. At the center of the certification's premise is the belief that "properly managed and certified farms can be important and positive elements in local and regional conservation and promote sustainable development strategies" (Rainforest Alliance, 2007a para 3). Certified farms are expected to protect watersheds, serve as biological corridors, and promote respectful living and labor conditions for those who work there (Rainforest Alliance, 2005).

Many types of farms—"from small cooperatives and family farms to large plantations owned by multinational corporations"—may apply for certification (Rainforest Alliance, 2007a, para. 7). Currently, the Rainforest Alliance certification is applicable to coffee, tea, bananas, cocoa, citrus, avocados, pineapple, passion fruit, other tropical fruit, cut flowers, ornamental ferns, and—through the SmartWood Certification—'sustainably' harvested timber and forest products (Rainforest Alliance, 2007b; Sustainable Agriculture Network [SAN], 2007a). Additional crops are continually being considered for inclusion into the program (SAN, 2007a). To date, criterion has not been established permitting the certification of honey. The development of the social and environmental standards required for certifying honey have been included in the Rainforest Alliance Fiscal Year 2008 Work Plan; the criteria are expected to pass public consultation and be authorized for implementation in 2009 (O. Bach, personal communication, October 26, 2007).

Organizational Structure

The New York City based Rainforest Alliance is an international non-governmental organization dedicated to the conservation of tropical forests. It is also the international secretariat of the Sustainable Agriculture Network (SAN), a partnership of eight independent environmental groups in Latin America. The SAN—via the consultation of additional industry, government, social, environmental and stakeholder groups—develops the guidelines and standards for the Rainforest Alliance certification. Subsequently, the Rainforest Alliance Certified seal is owned by and administered under the guidance of the SAN. Aside from guideline development, each member organization of the SAN (the eight, independent environmental groups) is accredited by the International Social and Environmental Accreditation and Labeling Alliance (ISEAL) to provide certification

services to farms, cooperatives, and agricultural companies in their respective country; member organizations are located in Belize, Brazil, Columbia, Costa Rica, El Salvador, Guatemala, Honduras and Mexico (Rainforest Alliance, 2007a). Producer certification is not limited to countries with an established SAN member organization.

Rainforest Alliance Certification in El Salvador

The SAN member organization providing certification services in El Salvador is SalvaNatura, a non-profit 'ecological foundation' based in the capital city of San Salvador. SalvaNatura's mission is to contribute to the quality of life in El Salvador through the restoration, conservation, and sustainable use of the region's environment and natural resources (Rainforest Alliance, 2007c). The organization has a unique arrangement with the Ministry of the Environment and Natural Resources (MARN) granting them management responsibility of most of El Salvador's national parks (Hecht *et al*., 2006). SalvaNatura is one of the most well established natural resource management and research organizations in the country (Hecht *et al*., 2006) and promotes the Rainforest Alliance certification as a means of protecting habitat, developing buffer zones and biological corridors near protected areas, and economic development through access to high-value markets (SalvaNatura, 2006).

In El Salvador, promotion of the Rainforest Alliance certification has been facilitated by the World Bank (Global Environmental Facility), NGOs, and the Rainforest Alliance (United Nations Global Compact, 2005). Over 50 national agronomists have been trained in the principles of the Sustainable Agriculture Network and 204 farms and nearly 2,500 people in the country are part of the initiative (United Nations Global Compact, 2005; SalvaNatura, 2006). High diversity shade coffee is the primary commodity certified (SalvaNatura, 2006), and, in 2002, an interesting marketing partnership was formed by coffee producers participating in the program. This partnership was designed to increase international market access, promote economy of scale, and receive broader institutional recognition (United Nations Global Compact, 2005). The land area under certification has increased significantly in recent years—35% between 2005 and 2006—to a total of nearly 8000 ha (SalvaNatura, 2006). Certified coffee farms, both small-holder and

plantations, produced about 17.3 million pounds of coffee in 2006 (SalvaNatura, 2006) Exports from this total production cornered 18% of El Salvador's high-value coffee market that same fiscal year (SalvaNatura, 2006).

Rainforest Alliance Certified Label & Markets

The Rainforest Alliance certification started in the early 1990s as primarily an environmental seal (SAN, 2005), "outside the sphere of social responsibility" (Nicholls & Opal, 2005, p248). However, in order to update their efforts to be in accordance with the holistic mission of the Rainforest Alliance initiative a number of additional social criteria were added. The Rainforest Alliance certification is now considered "one of the most significant new arrivals" amongst the social certification systems (Nicholls & Opal, 2005, p248). Sales from Rainforest Alliance Certified coffee, bananas, and chocolate alone surpassed $1 billion in 2006 (Rainforest Alliance, 2007d).

As of 2007, the Rainforest Alliance reports that nearly "10,000 farms and cooperatives on about 215,000 hectares (530,000 acres) in Brazil, Columbia, Costa Rica, Cote d'Ivoire, Dominican Republic, Ecuador, El Salvador, Ethiopia, Guatemala, Honduras, Mexico, Nicaragua, Panama, Peru and the Philippines" had been certified (Rainforest Alliance, 2007a). All told, the Rainforest Alliance calculates that more than 50,000 farm families are now beneficiaries of the program (Rainforest Alliance, 2007c). Currently there are over 450 companies sourcing from certified farms and authorized to market the Rainforest Alliance Certified seal of approval (International Social and Environmental Accreditation and Labeling [ISEAL] Alliance, 2006).

Rainforest Alliance Certified bananas and coffee are purported to account for 15% of their respective global market shares (ISEAL, 2006). A wide range of products carrying the seal can be found in retail outlets throughout the United States, Canada, European Union, Japan, Australia, Central and South America (SAN, 2007a). Certified products are sold in hotels, restaurants, coffee shops, supermarkets, retail outlets, gourmet markets, convenience stores, tourism centers, trains, airports, university campuses, and corporate offices (SAN, 2007a). There is no licensing fee required for an importer or manufacturer

to use the Rainforest Alliance Certified logo, thus further influencing the label's growth rate (Nicholls and Opal, 2005).

The Rainforest Alliance certification is regarded as having less consumer recognition than Fair Trade but with a growing number of Multinational Corporations, such as Kraft, Nestle, Chiquita, now sourcing and labeling products from Rainforest Alliance Certified farms consumer marketing is expected to increase significantly (Nicholls and Opal, 2005). In March of 2007, the Whole Foods Market initiated a new program—Whole Trade Guarantee—to source Rainforest Alliance Certified, as well as Fairtrade and organically certified—products from developing countries (Rainforest Alliance, 2007e; TransFair USA, 2007b), the Whole Foods Market has 196 stores selling natural and organic foods in North America and the United Kingdom (Whole Foods Market, 2007). The Rainforest Alliance anticipates the Whole Foods Market to source at least half of all its Southern country products from SAN certified farms within the next ten years (Rainforest Alliance, 2007e).

The Rainforest Alliance Certified seal is a universal label which can be applied to different types of products sourced from certified farms, and once a farm is certified the label may be applied to any farm commodity in which the SAN has an established set of standards (O. Bach, personal communication, October 26, 2007). Producers and companies authorized to use the label are free to promote their products worldwide, the labels use is not restricted to Northern countries as with Fair Trade (O. Bach, personal communication, October 26, 2007). For use on packaging however, the Rainforest Alliance has established a set of guidelines regulating applicability of the seal. These guidelines designate whether the seal can stand alone on product packaging, must be accompanied by a qualifying statement, or is permitted to be applied at all (SAN, 2007a). These guidelines—and applicable qualifying statements—differ according to the percentage of certified content and whether the product is single- or multi-ingredient.

Single ingredient products may use the label without any qualifying statement if at least 90% of total content is derived from Rainforest Alliance Certified farms (SAN, 2007a).

For the label to be applied to a single ingredient product the product must contain a minimum of 30% certified content (SAN, 2007a). Any single ingredient product containing between 30% and 90% certified content, and bearing the label, must be accompanied by a statement quantifying the percentage of the certified ingredient (SAN, 2007a). Companies requesting use of the seal on single ingredient products containing between 30% and 90% certified content are expected to implement a SmartSource plan, a step-wise program that sets benchmarks for increasing percent certified content within a set time-period (SAN, 2007a).

The Rainforest Alliance policy on multi-ingredient label use is geared towards assuring consumers that products carrying the seal contain a significant proportion of ingredients sourced from certified farms. For a multi-ingredient product to bear the seal the Rainforest Alliance Certified ingredient must be essential to its formulation and/or labeling—i.e., a 'core' ingredient (SAN, 2007a). Products meeting this requirement may use the seal where: A) 90% of the 'core' ingredient is sourced from Rainforest Alliance Certified farms, or B) 30% of the 'core' ingredient's dry weight *and* 30% of the total dry weight of the composite product are from certified farms, or C) at least 30% of the named 'core' ingredient is sourced from certified farms *and* the company is producing at a volume well above the current supply of certified ingredients (SAN, 2007a). In this lattermost case the company must have an approved and implemented SmartSource plan and be working with farmers to meet SAN best management practices (SAN, 2007a).

Focus of Rainforest Alliance Certification & Standards

As noted above, the objective of the Rainforest Alliance certification is to foster "the implementation of best socio-environmental management practices" amongst "the greatest number of farms possible (SAN, 2004, p4). To widen its producer base, the SAN initiative works with various forms and levels of group production. The SAN has established five different models of group certification; which include, (Model 1) individual small farmers working collaboratively, (Model 2) multiple farms of a single owner, (Model 3) the clustering of independent producers under a single trader, (Model 4) communal land management where producers are afforded usufruct rights, and (Model

5) federations of second and third level associations (SAN, 2004). For group certification, the collective of farms is not required to be legally constituted but—for eligibility—must meet the following:

- "The group must be relatively homogenous in terms of production systems, geographic location, and farm size;
- There are no large differences in natural factors (climate, soils, and types of ecosystems or natural vegetation) among the farms;
- For some group models, the cost of individual certification is disproportionately high in comparison with the sales value of the product;
- The group is sufficiently large and has adequate resources to support an impartial entity in managing a viable Internal Control System that objectively ensures that producers conform to production standards;
- Products from the certified group of farms included in the group certification are traded as a group and not individually;
- The group has or can implement a system of traceability that allows monitoring of the flow of certified products"—i.e. Chain of Custody (SAN, 2004, p3).

Model 1 group certification is the most common of the five and geared towards 1st level cooperatives and producer groups. This model was developed to facilitate the incorporation of small farmers into the initiative. The standards for Model 1 group certification "require the adoption of an Internal Control System and limits the annual audit to a random sampling of farms, all of which must pass the inspection for their group to be certified" (Rainforest Alliance, n.d.,b, para. 1). The random sampling is equal to the square-root of total farms participating in the group (O. Bach, personal communication, October 26, 2007). As a general rule, the group's administrative body is expected to provide technical assistance and training to member producers (SAN, 2004). The Eco-Morazán Cooperative, and its producers, would most likely fall under this model.

Group certification permits small farmers who, individually, would not have the resources to enter and benefit from the certification process (SAN, 2004). The Rainforest

Alliance initiative defines a 'small producer' as 1) a farmer who is not structurally dependent on hired labor, with exceptions made for peak harvest season or short term demands, 2) a producer who lacks the financial and technical ability to integrate 'Best Management Practices' into their farming system, 3) relies on 'traditional' production systems, 4) has limited access to markets and information, 5) has few resources available for administrative activities, and 6) one for whom the cost of individual certification would be greater than two percent of the crop's certified value (SAN, 2004).

For groups—or individual producers—to be certified by the Rainforest Alliance they must adhere to a list of 10 SAN 'sustainable agriculture principles', together called the Sustainable Agriculture Standard. These principles "include requirements for ecosystem and wildlife conservation, waste management, water conservation, soil conservation, community relations as well as fair treatment and good conditions for workers, including compliance to key International Labor Organization conventions and national law" (Fair Trade Association of Australia and New Zealand, 2007, para 1). These ten principles are a general set of standards applicable to the management of all sized farms and types of crops; each crop, in turn, has its own module with additional requirements (SAN, 2005).

Each principle of the Sustainable Agriculture Standard consists of 'criteria' that describe the best management practices farmers must meet for certification and creates the framework auditors utilize for evaluating overall farm compliance. In turn, each criterion consists of a number of 'indicators' that offer the producer "examples of both good and unacceptable social and environmental practices" (SAN, 2005, p2). It is the lattermost that serve to guide the farmers' field practices towards compliance with the Sustainable Agriculture Standard. It is important to highlight that these 'indicators' may vary according to social and environmental differences between countries, cultures or regions (SAN, 2005). "In order to obtain and maintain certification, the farms must comply with at least 50% of each principle's criteria, and with 80% of all criteria"; continued improvement in meeting all criteria is encouraged (SAN, 2005, p4). Any criteria identified as 'critical' must be complied with completely.

The SAN Standard consists of 14 different 'critical' criteria. These descriptions are central to the integrity of the certification and include: the establishment of chain-of-custody systems to prevent the mixing of products from certified and non-certified farms, the implementation of a comprehensive ecosystem conservation program, regulations on maintaining the integrity of natural ecosystems on the farm, the prohibition of hunting, gathering, extracting, or trafficking of wild animals on any certified farm, the appropriate disposal of wastewater and solid waste, the adherence to basic labor rights such as nondiscrimination and payment of a legal wage or higher, and prohibitions against forced or child labor (SAN, 2005). The remaining criteria relate to the control and appropriate use of specified agrochemicals, the prohibition of transgenic crops, and assuring that any newly cultivated land is suitable for the intended use (SAN, 2005).

In terms of small-farmer production the implementation of soil conservation measures are one of the greatest challenges faced when adopting the certification (O. Bach, personal communication, January 2, 2008). The general criteria regulating soil management—listed under the Soil Management and Ecosystem Conservation principle—are comprehensive and aimed at minimizing existing and potential erosion. Activities required are determined by soil characteristics, susceptibility, topography, and crop specific agricultural practices (SAN, 2005). Farms are expected to implement a range of control measures, such as the establishment and maintenance of terraces, windbreaks, live or dead barriers, and contour planting; a detailed timeframe for the implementation of said measures must be developed (SAN, 2005). Fallow areas must permit the recovery of natural fertility either through natural or planted vegetation and the cutting of natural forests is prohibited (SAN, 2005). The burning of agricultural lands for soil preparation is banned as well (SAN, 2005). In addition, producers must prioritize the use of organic fertilization produced from on-farm residues (SAN, 2005). With smallholders, just as with bigger farms, the certification permits a process of continuous improvement (R. Stout, personal communication, December 26, 2007).

In distinction from organic certification, which rules out the use of synthetic agrochemicals, the SAN Standard is centered on an internationally recognized Integrated Pest Management (IPM) model that permits the limited and controlled use of certain

synthetic agrochemicals but encourages the use of manual or biological pest control methods (SAN, 2005). Certified farms are prohibited from using chemicals found on the 'Dirty Dozen' list of the Pesticide Action Network or banned by the United States Environmental Protection Agency and European Union (Rainforest Alliance, 2007a). Wildlife conservation and worker welfare are two areas in which SAN standards surpass organic certification (Rainforest Alliance, 2007a). Like organic, the Rainforest Alliance certification requires that producers receive the national legal minimum salary and worker benefits; however, unlike Fairtrade, the standard does not include economic components assuring a minimum floor price or social premium (SAN, 2005).

It should be clarified that the SAN grants the Rainforest Alliance certification to operations meeting the above 'sustainable agricultural principles' at the 'farm' level, including all of its installations and workers, and not to specific companies, products or aspects of production (SAN, 2005). Outsourced independent manufacturers must comply with applicable national social and environmental legislation but are not audited against, or required to promote, SAN Standards (O. Bach, personal communication, November 20, 2007). That said, the SAN auditor must verify that outsourced manufactures are trained on, and following, SAN Chain-of-Custody criteria. All outsourced operations must be verified as implementing a number of procedures and policies guaranteeing the segregation, either spatially or temporally, of Rainforest Alliance Certified products from non-certified production (SAN, 2007b).

The Rainforest Alliance Certified seal may be applied to crops and products derived from certified farms for commercial purposes as long as criteria for that particular product have been developed, thus permitting an auditor to evaluate its production against SAN standards (SAN, 2005). The criteria for honey have not been established and further investigation will be needed to determine the applicability of the SAN initiative to the Eco-Morazán Cooperative. Since honey production is not the primary farming activity or income source for most Eco-Morazán shareholders it may prove unrealistic for producers to conform their overall farm management operations to SAN standards, since apicultural

output would be the only aspect of production marketed under the Rainforest Alliance Certified seal.

The Rainforest Alliance has begun a preliminary investigation into the challenges and potential of SAN honey certification. One challenge noted in the preliminary report is that the current scope of the SAN certification includes only 'cultivated crops', and is not applicable to 'livestock production' (SAN, 2006). Although many SAN certified farms include livestock, whose management must conform to SAN criteria and audits, the Rainforest Alliance Certified seal may not be used on such products (SAN, 2006). In accordance with the United States Department of Agriculture (USDA) categorization, the SAN classifies honeybees as livestock and has determined honey to not be a cultivated crop (SAN, 2006). This preliminary investigation—based largely on organic standards—reports that additional criteria must be developed to cover veterinary treatment, feeding regimes, appropriate foraging areas, honey treatment, and overall colony management (SAN, 2006).

Rainforest Alliance Certified Costs, Financing & Pricing

Since honey production is thus far not a certifiable product of SAN farms a specific cost and pricing analysis will not be provided in this document. The cost of Rainforest Alliance certification is noted to vary by country and productive scale. In general, the producer organization is responsible for paying a per diem rate and covering the travel expenses for auditors, the latter of which is greatly reduced if the audit is performed by a SAN member organization that is nationally based (Rainforest Alliance, 2007a), still a costly expense for a small producer organization. Producers are charged an additional annual certification fee dependent on the size of the farm or number of producers affiliated with the organization (Rainforest Alliance, 2007a). The Rainforest Alliance certification is reported to typically cost less than other certification initiatives, such as Fair Trade, and alternative funding sources are sought by SAN affiliates in order to incorporate farmers into the initiative who are unable to afford the cost of certification (Rainforest Alliance, 2007a). In addition, the Rainforest Alliance is "experimenting with

ways to involve more actors along the supply chain in sharing the modest costs of certification" (Rainforest Alliance, 2007a, para.13).

In regards to prices received, the Rainforest Alliance "is not directly involved in the negotiations between farmers and their buyers" as with Fair Trade and a guaranteed floor price is not required, although the Rainforest Alliance asserts that "most farmers are able to utilize their certification to leverage a price premium" (Rainforest Alliance, 2007a, para 16). Kraft Foods, for example, offers Rainforest Alliance Certified coffee producers a 20% premium for the beans they supply, a price noted to have fallen 21% below the Fair Trade floor price in 2005 (Ethical Corporation, 2005). This price margin narrowed, however, as the commodity price for conventional coffee rebounded from a 30 year low. In 2007, Rainforest Alliance Certified coffee producers in Latin America averaged a price nearly on par with the minimum Fairtrade coffee floor price (Ethical Corporation, 2007).

For some critics, certifications that utilize free market principles—such as the Rainforest Alliance initiative—are considered cheaper options permitting large multinational corporations to promote sales by tapping into the growing demand for ethically sourced products, instead of having to adopt the full Fair Trade model and assure producers pre-financing and a stable base price (Nicholls & Opal, 2005). The Rainforest Alliance emphasizes that farmers profit regardless of whether or not the certification brings a price premium since, in practice, the implementation of the SAN Standard helps to lower production costs and makes producers more competitive and self-reliant in the global marketplace (Ethical Corporation, 2005). In this sense, producer income is less a factor of a price premium than it is overall marketability and profit margins. The Rainforest Alliance asserts that "buyers are flocking to certified farmers because even though the [product] is a little more expensive its worth it because the quality is up, the consistency is up and the farmer is a much better business partner" (Ethical Corporation, 2007).

CHAPTER 5. DISCUSSION

The Fair Trade, organic, and Rainforest Alliance certifications are all widely recognized and steadily growing agricultural initiatives that hold promise for many Southern producers. Each certification has its own organizational focus, marketing potential, pricing structure, and label use requirements. For apiculturalists these three certifications present a number of challenges and opportunities. One of the main objectives of the Eco-Morazán Cooperative is to pay shareholders a living-wage for their apicultural production. The cooperative is working to develop value-added products composed of various hive products and is investigating the possibility of distributing specialty bottled honey. For the cooperative, a certification that offers a price premium and permits the marketing and sale of single ingredient and value-added products is desired; as is a label that allows the producer group to promote certified products in both domestic and international markets. This section reviews several of the more salient aspects of each certification and compares various strengths and weaknesses in regards to how they may apply to apicultural producers in general and the Eco-Morazán Cooperative in particular. The final subsection discusses challenges Eco-Morazán may face in becoming certified.

5.1 Organizational Focus & Growth in El Salvador

As discussed in Chapter 4 each certification has its own particular focal points and methodology for promoting change. In review, the focus of the audit—and thus the scale of its intervention—is determined largely by the certification's organizational mission. The Fair Trade scheme seeks to ensure equitable trading relations for disadvantaged producers. Therefore, the FLO works directly with Southern country producers—primarily with small-producer cooperatives and unionized farm labor—connecting them with buyers in Northern countries. To promote macroeconomic change each actor along the supply-chain is expected to register with and adhere to FLO criteria. In comparison, the organic and Rainforest Alliance initiatives each place primary emphasis on on-farm production, although socioeconomic criteria and the auditing of outsourced processing facilities are also important considerations. With organic, the development of ecologically sensitive farming practices and assurance of agrochemical free products is

the historical mission. Thus, focus is directed to the 'plot' level where farmer practices are expected to maintain and improve the integrity of the agricultural system through natural means. For the Rainforest Alliance initiative the monitoring of chemical inputs is less regulated. This audit is broadened to the 'farm' level to ensure that land-use practices do not undermine the overall conservation value of the farmer's property, especially on non-agricultural land. For the Rainforest Alliance organization, facilitating regional conservation efforts is the primary objective.

Each certification has significance for socioeconomic development and environmental conservation in El Salvador. Each focused their initial work with the country's biodiversity friendly shade coffee forests; working to both protect this valuable resource and support the livelihoods of those who cultivate it. To date the Fair Trade initiative is selling several million pounds of coffee and cashews annually and seeks to expand to include apiculture and macadamia. With organic, the land area under certification has increased 70% in recent years to over 7,000 ha. The exports of organic coffee, cashew, and sesame seeds generate nearly USD$4 million in foreign exchange for the country each year. A number of honey producer organizations are in transition to organic today. The Rainforest Alliance certification is promoted as a conservation tool in El Salvador and continues to focus heavily on shade coffee. This production accounts for nearly one-fifth of the country's high-value coffee exports. Land under certification now covers some 8,000 ha of land in the country; larger than any single protected area in the country. Growth rates of these certifications in both El Salvador and the global market suggest they will continue providing an important role in the country's agricultural sector.

5.2 Global Sales & Market Considerations

The Fair Trade, organic, and Rainforest Alliance certification have experienced dramatic growth in recent years. With global sales estimated at over €30 billion organic certification is by far the most well established of the three. Globally, over 31 million hectares are managed under organic production methods. Products carrying this label are promoted in both specialty niche markets and increasingly in mainstream outlets. Consumer awareness regarding the mission of organic certification is likely high and

small producers have a noted competitive advantage in converting to organic production. The Fair Trade and SAN initiatives are significant in their own right, with sales for each well over USD$1 billion per year. In terms of global recognition, consumers are likely more familiar with the Fair Trade mission and label than with the Rainforest Alliance Certified seal. The fact that Fairtrade products have traditionally been promoted in specialty markets suggests that consumers are basing their buying decisions, in part, on recognition and trust in the Fairtrade label. Since products carrying the Rainforest Alliance Certified seal often reach the public through mainstream buyers one could argue that recent growth trends may be attributed more to the high sales volume generated by such companies rather than to consumers actively choosing the certified product over another.

For producer groups operating at a limited scale, the Fairtrade and organic certification may be a greater asset for international marketing than would the Rainforest Alliance seal. A small-farmer group with few producing shareholders would most likely focus attention on niche markets where consumer consciousness would seem to favor the Fairtrade and organic labels. Markets for apicultural products carrying these labels may include higher-end specialty retailers such as tea shops, natural health food stores, and alternative trade outlets. A possible exception would be Rainforest Alliance Certified products endorsed by retailers whom consumers recognize as having a socially and environmentally responsible approach to business. All three labels are being promoted by the Whole Foods Market's new program to source products from certified Southern farms and producer groups. Further investigation is needed to determine whether the Eco-Morazán Cooperative would be eligible to market its products through this program.

Another consideration regards the latitude producer groups retain in marketing their own products, especially in Southern countries. Each label has well established markets in North America, the European Union, Japan, and Australia. While the Fairtrade label is confined to markets in Northern countries, the organic and Rainforest Alliance seal may be promoted globally, although stipulations may apply. With the Rainforest Alliance initiative, distributors and retailers must register with the SAN for use of the seal. Legal

stipulations often apply in regards to use of the term 'organic' in many countries. Markets for high-value and organically certified products are growing in many Latin American countries. A benefit of both the organic and Rainforest Alliance certification is the fact that Southern producer groups may market their own products with the label in domestic outlets. Nationally, SalvaNatura's reputation may facilitate consumer recognition of Rainforest Alliance Certified products in El Salvador. Since the Fair Trade initiative requires the producer group to establish a trading partnership with buyers in Northern countries—and sell through them—Fairtrade Certified producers may be more constrained in terms of how their final product makes it to shelf.

5.3 Label Use & Price Premiums

Currently, only the Fair Trade and organic certifications include apicultural production. The criteria for the Rainforest Alliance's apicultural certification are expected to be complete in 2009 and will likely include all aspects of hive production. All hive products are covered with organic certification. Presently, the Fair Trade scheme is limited by the fact that its criteria are only applicable to honey. Thus, additional hive products—namely, beeswax, bee pollen, royal jelly, and propolis—may not be individually marketed with the label. These products will likely be included into the initiative in the near future. With the Fair Trade label, a major constraint is that honey accounts for only a small percentage of total global sales of Fairtrade products. The sales volume of certified honey was only 1,331 metric tons in 2005, well below the annual output of El Salvador alone. An opportunity for Eco-Morazán may be the proposed March 2008 opening of the U.S. market to Fairtrade Certified honey and hive products. TransFair USA has determined ample market opportunity for non-organic Fairtrade honey. U.S. buyers have contacted this national Labeling Initiative inquiring about Fairtrade Certified apicultural producers in El Salvador.

For the Eco-Morazán Cooperative, the Fair Trade, organic, and Rainforest Alliance certification would each fit its marketing interests. Each label may be used with both single and multi-ingredient products and, with the Rainforest Alliance certification, multiple crops. Stipulations are as follows: With the Fair Trade label the certification

refers to the ingredients within a product and not the product itself. The FLO maintains two primary labels, a traditional label used if 100% of ingredients eligible for certification are certified and an ingredient specific label for multi-ingredient use. For organic products the labels may vary according to country, national organic program, and ingredient composition. In the U.S., for example, a "100% organic" and an "organic" label are used with single ingredient products and a "made with organic" label for multi-ingredient products in which at least 70% is organically certified content. With the SAN initiative regulations concerning label usage are delineated between single and multi-ingredient products. The label may be applied if 90% of total content is derived from certified farms. Any single ingredient product with 30 to 90% sourced content must include a qualifying statement. For composite products the certified ingredient must be essential to its formulation and/or labeling—i.e. a 'core' ingredient. The use of the Rainforest Alliance certification with multiple crops may promote on-farm diversification.

Regarding pricing structure, only the Fair Trade certification provides a guaranteed floor price; organic production that is also Fairtrade Certified is the one exception. All three certifications tend to have improved buyer relations and market access. Only Fair Trade provides producer credit—up to 60% of a seasonal contract—and is directly involved in the establishment of trading-partnerships, although producers are expected to establish buyer connections outside of the Fair Trade network. The organic and Rainforest Alliance certifications may be more susceptible to vagaries in the global market. Even with the guaranteed premium, the base price for A Quality Fairtrade honey, including the $0.15 per kilogram social premium, is still below the USD$2.00 price per kilogram Eco-Morazán hopes to pay shareholders for raw honey. The Fairtrade price is USD$1.95 per kilogram. Only A Quality Fairtrade/Organic honey surpasses this mark at USD$2.10 per kilogram. While below the unit price Eco-Morazán aims to pay, the Fairtrade base price for raw honey is nearly double that what small-holder producers receive from conventional exporters in El Salvador. The Fair Trade system does not currently have a pricing structure for additional hive products and leaves price negotiations for value-added products up to individual buyers and producers.

Although not guaranteed, both organic and the Rainforest Alliance certification are commonly associated with price premiums. The conversion to organic apicultural production is relatively straightforward and does not offer much in terms of savings. Aside from certification costs, a 3.3% increase in time and labor is noted as the primary investment. The organic price premium is attributed primarily to the higher price per unit received from buyers. On the other hand, the price premium for Rainforest Alliance Certified products is often leveraged through overall marketability and lower production costs. For small-holder apiculturalists, profitability attributed to 'improved' apiary management would likely be negligible since production is not dependent upon costly chemical inputs or high labor investments, as demonstrated by the modest cost of converting to organic. For a producer group with a relatively small number of shareholders economy of scale would not be a significant factor. Therefore, unless a small-farmer producer group can establish equitable market relations with a particular buyer, or administrative costs can be reduced, it seems as though the Rainforest Alliance price premium may be minimal. One area where producers may profit is if the certification criteria call for the long-term improvement of melliferous forage on certified farms, potentially impacting yields (See Figure 3).

5.4 Challenges for Eco-Morazán

Thus far in the discussion issues have been addressed concerning the applicability of each certification to apicultural producers and the marketing interests of the Eco-Morazán Cooperative. The above topics have related to organizational objectives, consumer label recognition, marketing potential, label use, and pricing structure. The question still remains, however, of which, if any, certification the Eco-Morazán Cooperative is actually capable of obtaining. For initial operations the cooperative is dependent upon financial assistance from the Swedish Cooperative Center. This dependency has led FECANM to own majority share in Eco-Morazán. Financial constraints are also pressing the cooperative to seek outsourced processors for the manufacturing and labeling of its products. The fact that the cooperative consists primarily of small-farmer apiculturalists means that most producers have limited access to land, both for domestic agricultural production and in distancing their apiaries from conventional agriculture, labor, and

capital. It is these characteristics of the cooperative that may present the greatest challenge to Eco-Morazán in achieving certified status.

For Fair Trade certification, the Fairtrade Labeling Organizations' emphasis of working with democratic producer organizations and various actors along the supply chain may hinder Eco-Morazan's participation in the scheme. As mentioned, the cooperative is member operated but majority share is owned by FECANM. FLO-Cert's Central American liaison, Kieran Durnien, believes that even though all shareholders retain equal voting rights this majority ownership could affect eligibility. Eco-Morazán should submit an initial application to FLO-Cert in Germany to see if its statutes and membership composition meet FLO standard's for small-farmer organizations. Even if shareholder composition were to change in the near-term, the cooperative's reliance upon outsourced processors in El Salvador—who are unlikely to meet FLO criteria—may still preempt the cooperative from certification. Fair Trade certification may have to be postponed until the cooperative has a larger shareholder base and is financially capable of manufacturing its own products. It is worth noting that, in this instance, the democratic objectives of the Fair Trade initiative may act against the very producers it aims to assist.

For organic certification, the honeybee's ability to cover a wide distance while foraging presents the greatest difficulty for the cooperative. Amongst the organic movement, 'organic' generally refers to farming practices and final products void of agrochemicals. Most apiculturalists involved in the cooperative manage their apiaries 'organically' by default, in the sense of not utilizing chemical inputs, but employ chemical fertilizers for domestic grain production and have no control over farm practices used on adjoining—or proximal—land. For apiculture, the organic audit focuses on the apiary. In order to limit the contact foraging bees have with agrochemicals certifiers require apiculturalists to locate their apiaries a set distance from conventional agriculture; three kilometers is required by the U.S. and EU accredited organic certifier detailed in this document. This requirement is not universal and is often determined by legislation in the country of sale. For products to be labeled and sold as 'organic' in many Northern countries the certifying agency must be accredited by the country's respective national organic program. For the

cooperative to sell organic output in most Northern countries producers must manage their apiaries this three kilometer distance from agriculture. The apicultural project based in the Río Sapo Natural Protected Area is likely the only shareholder capable of meeting this requirement. Organic certifiers requiring less distance are likely operating in Central America but it is uncertain whether these certifications are accredited for use in the U.S. and E.U. These certifications may be valid for use in domestic markets and neighboring countries.

The Sustainable Agriculture Network does not currently include apiculture in its certification scheme. So the applicability of the certification criteria to the Eco-Morazán Cooperative is uncertain at this time. The existing Rainforest Alliance certification is only for use with agricultural 'crops'. The certification criteria cover issues relating to livestock management but use of the Rainforest Alliance seal is not permitted for the marketing of such products. In a preliminary investigation into the challenges of certifying apiculture the SAN has determined that honeybees will be classified as livestock and that apicultural output is not a cultivated crop. The SAN has also mentioned that 'organic' principles may be included; including a set distance requirement. With its current Standard the SAN does not require full organic compliance; nor is the certification bound by legislation in the country of sale. Therefore, the full three kilometer distance requirement may not be employed. Once complete, the criteria of the SAN Standard for apiculture will determine its applicability to the cooperative. As the existing SAN Standard for cultivated crops now stands the certification presents a challenge to the cooperative. Namely, a 'farm' level audit for small-farmers who would only be using the label for apicultural production. The current SAN Standard requires 'farm' level compliance with costly soil management criteria. The challenges of certification are detailed in Chapter 6, Recommendations to the Sustainable Agriculture Network.

Figure 4 below compares the strengths and weaknesses of the Fair Trade, organic, and Rainforest Alliance certifications discussed above. The table reviews the mission of each initiative, organizational focus, criteria priorities, marketing approach, global sales,

established markets and growth, label use, and price structure. In addition, the table outlines the cost breakdown for both the Fair Trade and organic certification and covers several financial issues related to the Rainforest Alliance program. The table also includes a section on the types of support producers may receive for covering the costs of certification.

Figure 4. Comparison of Fair Trade, Organic, and Rainforest Alliance Certification

CERTIFICATION	Fair Trade	Organic	Rainforest Alliance
Mission	Ensure equitable trading relations for disadvantaged Southern producers.	Develop ecologically sensitive farming practices.	Integrate agricultural production with the conservation of biodiversity and human development.
Organizational Focus	Macroeconomic change & supply chains.	Agronomic production methods & renewable resources.	Regional conservation objectives & local socio-economic conditions.
Focus & Relative Strength of Criteria	Democratically operated producer cooperatives & unionized labor; with an emphasis on developing long-term & direct trading-partnerships. Strength: Socio-economic criteria; recently strengthened environmental criteria.	'Production' level practices that maintain and improve the integrity of agro-ecological system; with an emphasis on prohibiting use of agrochemicals. Strength: Agricultural requirements; generalized in terms of socio-economic considerations.	'Farm' level sustainable development strategies; with an emphasis on ensuring conservation- & habitat-value of land. Strength: Environmental criteria; newcomer in terms of socioeconomic criteria.
Market Focus & Promotion	Specialty markets and mainstream brands.	Specialty markets and mainstream brands.	Mainstream brands and specialty markets.
Global Sales	> €1.14 billion / year (2006 sales)	> €30 billion / year (Projected sales for 2006)	> USD$1 billion (2006 sales from coffee, chocolate, and bananas alone)

CERTIFICATION	Fair Trade	Organic	Rainforest Alliance
Established Markets & Growth	North America, Europe, Japan, Australia, New Zealand. Considerable growth in U.S. & some E.U. countries (60 & 35% annual increases, respectively).	North America, Europe, Japan. Markets have demonstrated stable growth for over 15 years (>20% annually). Growth projected to continue.	North America, Europe, Japan, Australia, and Latin American countries. Rapid growth in some E.U. countries & U.S. (Noted favorite of multinational corporations)
Label Use	Label may be used only in countries w/ a national Labeling Initiative recognizing certified product, typically only in Northern countries. Buyer must register with FLO & pay licensing fee to use Fair Trade label. May be used for composite products; stipulations apply. Certification will likely apply to all aspects of hive production once FLO develops additional criteria.	Label may be used globally, in both domestic and international markets. Producer group may market own product with label. Use of term 'organic' on product label is often regulated by legislation in country of sale. Some Northern countries require certifier to be accredited by respective national organic program. May be used for composite products, stipulations apply. Certification applies to all hive products.	Label may be used globally, in both domestic & international markets. Producer group may market own product with label. Buyer must register with SAN but no licensing fee is required. May be used for composite products, stipulations apply. Certification will apply to all aspects of hive production once apicultural criteria are developed.
Price Structure	Minimum floor price, social premium, & producer credit. FLO is directly involved with buyer relations.	No guaranteed floor price or social premium. Price premium for producer is common. Certification agency is not involved in buyer negotiations.	No guaranteed floor price or social premium. Price premium for producer is common; leveraged through overall marketability and lower production costs. Rainforest Alliance is not involved in buyer negotiations.

CERTIFICATION	Fair Trade		Organic		Rainforest Alliance
Pricing Structure (Continued)	**Fairtrade** A Quality Honey $1.80 / kg +$0.15 / kg (S.P.) =USD$1.95 / kg **Fairtrade/Organic** A Quality Honey $1.95 / kg +$0.15 / kg (S.P.) =USD$2.10 /kg		Pricing depends upon individual buyer / seller relations.		Pricing depends upon individual buyer / seller relations.
Certification Costs & Additional Fees (for Eco-Morazán & processing facility)	App. = Initial = Cert. Proc. = Facility (<10 emp.) **1st Year Total =** Annual = renewal	€250,00 €2.000,00 €200,00 **€2.450,00** €612,00	App. = Cert. = $ / hive = Proc. Facility = **Annual Total =** Extra $ =	$30.00 $150.00 ~224@ $1.05 $400.00 **$815.00** Travel & per diem	Specific cost breakdown not available. SAN initiative is noted to cost less than Fair Trade. Fee is dependent upon size of producer group and productive scale. In-country certifier lowers cost considerably. Processing facility must be inspected.
Support Covering Certification Costs	Producer Certification Fund & motivated buyers.		USAID, CLUSA, & some buyers.		Supply-chain actors & rural development projects.
Opportunities for Eco-Morazán Cooperative	TransFair USA expects new market opportunities in U.S.; buyers have requested Salvadoran producer contacts. Cooperative may negotiate price above floor price with buyers. Social premium may be reinvested into coop. Whole Foods Market may source from certified producer groups.		Well established global markets. Consumer label recognition is high. Label may be used nationally. Certification would not require producers to conform all farming practices to organic standards, only apiculture. Whole Foods Market may source from certified producer groups.		Once a 'farm' is certified the label may be used to market additional crops; as long as SAN has criteria developed for particular crop. May promote on-farm diversification. Label may be used nationally; Salva-Natura is well-known. Whole Foods Market may source from certified producer groups.

CERTIFICATION	Fair Trade	Organic	Rainforest Alliance
Challenges for Eco-Morazán Cooperative	Current standard only applicable to honey. Floor price is below price desired to pay shareholders / kg; and does not consider value-added products. Majority ownership by FECANM may hinder Eco-Morazán's inclusion into initiative. Outsourced processing facility not likely to meet Fair Trade standards.	Required 3 kilometer radius between apiary location and conventional agriculture will exclude most shareholders from certification. Organic certifications requiring less distance likely not valid in Northern countries; may be used for product promotion in domestic markets or neighboring countries.	May be 2009 before apicultural standard is developed. 'Farm-level' audit will likely dissuade most shareholders from participating in certification scheme. Once developed, apicultural criteria may require distance requirement similar to organic certification.
Constraints for Apicultural Producers	Market for Fair Trade honey is relatively small; global sales are on par w/ El Salvador's annual production.	Country specific national organic programs may require producer groups to acquire multiple certifications.	Apiculture is often not highest priority in terms of small-farmer livelihoods. Adoption of certification may be unlikely if emphasis is given to costly soil control measures.

CHAPTER 6. RECOMMENDATIONS

Chapter 6 provides recommendations to the Eco-Morazán Cooperative regarding each three certifications and suggestions to the Sustainable Agriculture Network on how apicultural criteria may be developed to meet the socioeconomic interests of small-farmer apiculturalists involved the cooperative.

6.1 Specific to Eco-Morazán Cooperative

In regards to their adoption by the Eco-Morazán Cooperative it is anticipated that the pros and cons of each certification will be assessed by producers of the cooperative in order to decide which, if any, best meets the needs of their organization. There is no assurance that any of the three certifications discussed in this document will apply. I want clarify that I am not recommending the Eco-Morazán Cooperative to pursue any specific certification versus another. Certification is a voluntary and democratic process that I believe should be decided by producers, since it is their livelihoods that will be impacted. The paragraphs below discuss a number of important factors the Eco-Morazán Cooperative should consider.

Through my researching of this paper a common theme arose when I would ask certification representatives if they had any recommendations for producer organizations interested in becoming certified. These representatives felt it important to stress that the certification process—including the criteria, requirements, and audit—is a rigorous and lengthy undertaking that producers must be serious about if they are to achieve certified status. I commonly heard that any organization pursuing certification should be geared up to meeting stringent standards on issues such as quality, traceability, and institutional management. These are issues that the Fair Trade representative, in particular, noted as becoming more important in the global marketplace and the standards that many developing nations will consider the norm in coming years. For producer organizations interested in certification it was recommended that they read the standards thoroughly and make a self-evaluation of their level of commitment and overall capacity before going ahead with the full application process. Representatives from the three initiatives

offered to provide either an orientation meeting or additional information if the Eco-Morazán Cooperative wishes to apply; which may help determine whether to go ahead with the full application process.

In offering suggestions specific to the Fair Trade and organic certification there are a number of considerations the Eco-Morazán Cooperative should bear in mind. First, I believe it may be a valuable learning opportunity for shareholders in the Eco-Morazán Cooperative to send in the pre-application materials to FLO-CERT GmbH in order to see how their statutes, board composition (i.e. gender disparities), and traditional farm practices line-up with the standards of an internationally recognized social and environmental justice organization. This process could demonstrate to the producers and cooperative administration the level of scrutiny and scope of the issues that would need to be addressed before certification. TransFair USA has stated that their office is available to provide feedback and help facilitate the certification process (M. Spaull, personal communication, November 20, 2007).

In consideration of the price Eco-Morazán is hoping to pay shareholders per kilogram of output the Fairtrade/organic certification (A Quality) is the only combination that would guarantee a similar base price for honey. Maintaining high quality honey would be important in meeting desired price and strengthening buyer relations. Both of which could provide Eco-Morazán with greater leverage in establishing a higher price for raw honey and value-added hive based products. The Fairtrade certification requires buyers to commit to paying a social premium, a percentage per unit price earmarked for community development projects. The social premium can be used for a variety of projects. If the Eco-Morazán Cooperative decides to pursue Fairtrade certification the funding may be used to cover the costs of subsequent organic certification, if organic certification would be an option considering the distance requirement from a producer's apiary and conventional apiculture.

With the above in mind, organic certification agencies permitting a smaller radius between apiary and non-organic certified crops likely operate in El Salvador. The

applicability and marketing potential of these certifications were not specifically outlined in this paper. When choosing an organic certifier the cooperative should pay special attention to assuring that the agency's certification is accredited for use in the market of interest. If organic certification is not possible for the majority of beekeepers, the organic standards could act as guiding principles regarding hive management and quality standards. FECANM has noted that, in reality, the only producer capable of meeting the three kilometer radius requirement may be the privately funded apicultural project in the Río Sapo Natural Protected Area. If this ICD project is successful and capable of producing significant output it may be worthwhile for Eco-Morazán to work with this producer in becoming organically certified. The Integrated Conservation and Development aspect of this production could be a valuable tool helping the Eco-Morazán Cooperative to establish recognition in both domestic and international markets.

Another option would be for Eco-Morazán to hold off on a decision regarding certification until 2009, when the Sustainable Agriculture Network projects finalizing the criteria for apicultural production. The certification would not guarantee the price desired by Eco-Morazán but may facilitate international and domestic market access for its products. If this initiative seems of interest it may be worthwhile for the cooperative to familiarize itself with the existing SAN Standard and assess producer ability to meet its 'farm' level criteria. If meeting current criteria seems improbable it may be in the cooperative's favor to devise a draft version of criteria producers may meet for compliance. The SAN utilizes industry input in the establishment of its Standard.

6.2 Recommendations for the Sustainable Agriculture Network

The Rainforest Alliance certification, as it is currently designed, presents a number of challenges for small-holder apiculturalists involved in the Eco-Morazán Cooperative. The primary challenge I see for integrating the current SAN Standard into the farming operations of Eco-Morazán shareholders centers on the fact that the SAN audit occurs at the 'farm' level and shareholders would only be marketing one small aspect (hive products) of their total farm output with the Rainforest Alliance seal. As noted above, apiculture is a secondary income generating activity that augments on- and off-farm livelihoods and provides only a small percentage of total shareholder income. Apiculture

is an important contributor to the livelihoods of these households but, at current levels, is not their highest priority. Since the certification would be applied only to apiculture I doubt that most producers involved in the cooperative would be willing, or able, to adapt their entire farm management system to the SAN Standard, the one producer operating in the Río Sapo Natural Protected Area would be the exception. This project is 'organic' by default and exists independent of agricultural production. Certification criteria would focus more on sustainable management practices and labor conditions.

For small-farmer households involved in the cooperative a 'farm' level audit would require the implementation of soil conservation criteria on the plots these farmers are cultivating for domestic consumption, primarily corn and beans. Most of these producers are subsistence level farmers who rely on short-fallow shifting cultivation to produce food for their family. Insufficient access to arable land and declining soil fertility are serious constraints for many of these households, as is labor availability. The high incidence of rural out-migration and declining fertility has left many households headed by women and/or with a reduced pool of productive labor. From my experience working with hillside farmers in this part of El Salvador, and through discussions with agroforestry volunteers and professionals throughout the country, it seems that many small-farmers in El Salvador are conservative in their experimentation with 'alternative' production strategies, even if the implementation of such strategies promises to reduce costs and improve soil productivity. I believe that most apicultural producers would be slow to adopt any criteria that would regulate or put stipulations on how they produce food for their family, or cost more resources. The labor and financial investments required to implement would be a considerable burden for most households.

Complying with the 'social' criteria in the Standard should not be a major issue for producers involved in the Eco-Morazán Cooperative, and the organizational structure of the cooperative—including FECANM—could likely implement the Standard's policy, chain-of-custody, and administrative management requirements; including the establishment of an effective Internal Control System. With the above in mind, and since apicultural production does not require the removal of vegetation (and in practice actually

benefits from maintaining forest/vegetational cover; see Figure 3.), lead to soil erosion, or depend heavily upon chemical inputs, I propose that the SAN develop an apicultural certification that, from the moment of certification, emphasizes social and broad conservation criteria rather than specific soil control measures. The certification should allow small-holder apiculturalists to pursue the SAN initiative under the conditions that they 1) comply immediately with the current Standard's social criteria, 2) meet a set of general and 'critical' criteria geared towards ensuring the protection of existing on-farm habitat (both natural and anthropogenic) and wildlife, and 3) implement basic soil conservation measures over an extended period of time, a 'step-wise' approach that acknowledges constraints small-farmers face in a specific region, country, or environment.

As the SAN Standard currently exists producers must comply with 50% of each principle's criteria, 80% of all criteria, and each of the 14 'critical' criteria. For the initiative to reach a wider producer base the certification of apicultural production should adhere to the above percentages for all principles minus Soil Management and Conservation. The fact that the SAN does not categorize apicultural products as cultivated 'crops' would seem to substantiate such a re-prioritization. In terms of soil management this step-wise apicultural certification could present farmers with a choice of several techniques or practices to implement over consecutive years or farming seasons. The scale of required measures should be proportionate to an individual producer's level of apicultural output and become more exacting with time or as the level of an individual producer's apicultural production increases. This step-wise approach should be applicable only to 'small-farmer' group certification, since large-scale or individually certified apicultural producers are presumably operating at a scale to where apiculture is a more significant contributor to total income. In addition, it should be specific to producers using the label only on apicultural production; if producers decide to use the label for additional farm commodities then full compliance with the current Rainforest Alliance Standard would be expected.

Regarding the development of environmental criteria, apicultural certification should design guidelines supporting the unique and ecologically sustainable characteristics of

beekeeping, including its dependence upon floral diversity, pollination attributes, and beekeepers documented role as environmental advocates. In this latter sense, certified apiculturalists may be expected to educate peer groups on the habitat needs and ecological services of bees. The pollination services of native and non-native bee species contributes to rural livelihoods (especially yields) and forest succession; pollination benefits both certified and non-certified agroecological lands and may be poorly understood by rural producers. Two important areas where public outreach should focus include the promotion of pesticide application practices designed to minimize pollinator contact with agrochemicals and informing rural households of the ill effects of human perturbation on native colonies, namely forest clearing and burning and the hunting of stingless bees for their honey. The robbing of feral Meliponinae colonies (some species) is a common practice throughout El Salvador and may affect bee survivorship and pollination efficacy.

In support of regional conservation efforts, it is common for farming households throughout El Salvador, and notably in Northern Morazán, to permanently cultivate a portion of their land with fruit trees and shade coffee. These domestic agroforests provide valuable ecological services and have been identified as important habitat in the country. Maintaining and promoting high diversity agroforests may be a viable contribution small-producer households can provide to environmental conservation. The promotion of melliferous shade trees, ground cover, and fruit trees on certified lands may improve apicultural yields, livelihood security, and habitat value. Many melliferous floral species have been identified as important food sources for native pollinator assemblages as well. As with the step-wise implementation of soil conservation measures discussed above, the scale and time-frame for agroforestry improvements would need to be considered, as would requirements regarding structural composition, species richness, size and shape of the area, and parameters on multipurpose use such as fuel wood extraction. The elimination of hunting, capturing, and trafficking of wildlife on certified lands would be another valuable contribution to conservation in El Salvador.

In terms of apiary management, the Standard should still require an Integrated Pest Management approach and follow the basic principles of ‘organic’ apiculture. However,

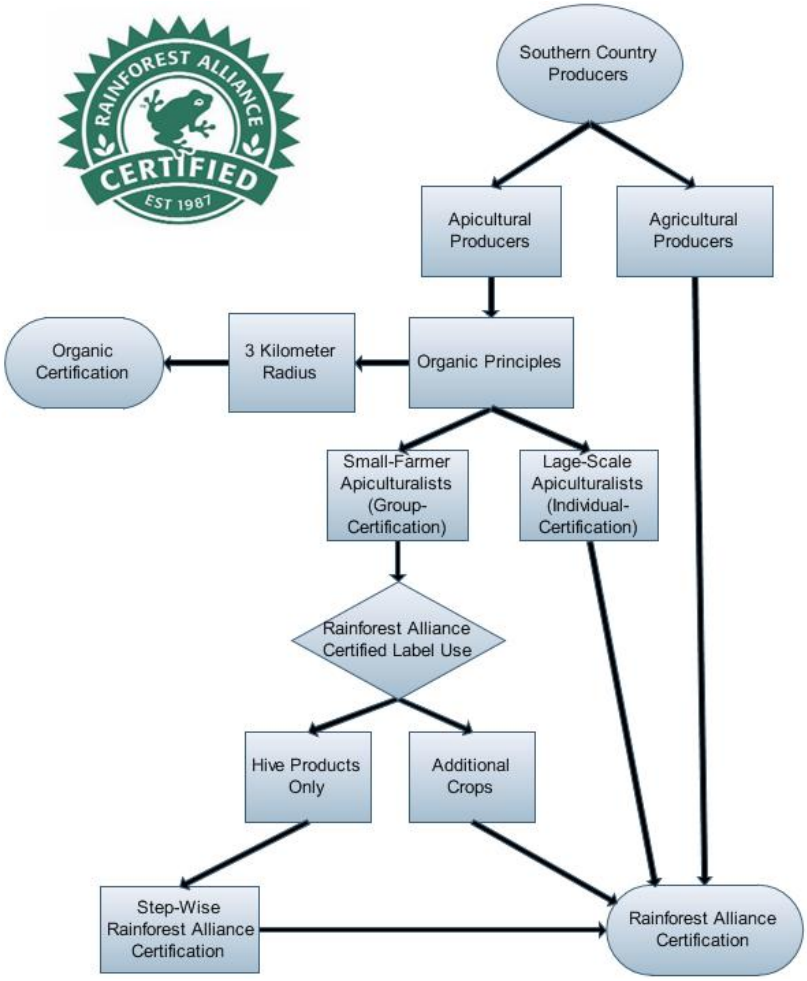
the requirement of a three kilometer radius between a producer's apiary location and non-organically certified or conventional crops, as required for organic certification, should be withheld from the Rainforest Alliance certification. The following are important to take into account when developing SAN apicultural criteria. The requirements for apicultural products labeled as organically certified do not follow a universal standardization, but are regulated according to various national organic programs or on a country by country basis. Unlike organic certification, the SAN initiative is not constrained by nationally determined criteria or legislation. The Fair Trade initiative does not require organic certification and has determined a substantial market to exist for conventional output.

Regarding producer interest in an apicultural certification, it is likely that small-farmer apiculturalists capable of maintaining a three kilometer radius would choose organic certification over the Rainforest Alliance initiative. Organic certification has a larger global market and does not require a farm level audit or compliance with such wide-ranging social criteria. Indeed, a three kilometer radius would preclude most Eco-Morazán members from participating in the Rainforest Alliance initiative. On the national level, the initiative would reach a wider apicultural base in El Salvador if such a distance requirement were omitted from the Standard. Apiary location could still be a focus of the Standard however, with a requirement to locate apiaries a certain distance from such sources of contamination as municipal waste sites, busy roads, or polluting industries.

Figure 4 below lays out the proposed 'step-wise' approach to Rainforest Alliance certification for apicultural producers. This flow-chart differentiates Southern country producers by apicultural production versus agricultural production. Agricultural producers would pursue the certification via the current SAN Standard. Apiculturalists would be expected to utilize organic apicultural methods in apiary management, excluding a three kilometer radius from conventional agriculture. Apiculturalists capable of achieving said distance would presumably pursue organic certification. Continuing, apiculturalists would be divided between 'small-farmer' and 'large-scale' producers. Larger producers would be expected to pursue certification via Soil Management and

Conservation criteria outlined in current SAN Standard. 'Small-farmer' producers could achieve certification via a step-wise program, described above, or via the current Standard if additional crops are to be marketed under the label.

Figure 5. Recommended 'Step-Wise' Approach to Apicultural Certification



6.3 Additional Considerations

The above proposal to the Sustainable Agriculture Network regards the development of apicultural certification criteria capable of reaching a broad producer base in El Salvador. The discussion provides a general guideline for criterion based on challenges the Eco-Morazán Cooperative may face in becoming Rainforest Alliance Certified. I believe that many constraints Eco-Morazán shareholders contend with hold true for small-producer apiculturalists in other regions of the country. Major small-producer challenges center on

limited access to land, labor, and financial resources. The recommended certification approach pushes for organic production methods that do not require the apiary to be based a lengthy distance from conventional agriculture. In obtaining apicultural certification, 'farms' would be given wider latitude than with the agricultural Standard regarding management of lands dedicated to the cultivation of basic grains. Emphasis would be given to promoting the habitat value of agroforests and utilization of apiculturalists in a field-extensionist role; both of which would integrate non-traditional sectors into the conservation discourse. As with the current Rainforest Alliance Standard, apiculturally certified farms would be expected to protect natural habitat and wildlife and meet socioeconomic development requirements. All Best Management Practices would be carried out via a 'step-wise' approach determined by the scale of production.

While these recommendations are geared towards small-producer apiarists, several property rights issues remain regarding the applicability of this proposal. The above suggestions call for long-term land improvements and producer control over resource extraction. Secure land-tenure is often paramount to the willingness or ability of small-producers to make such investments. This begs the question of how to integrate apiculturalists into the initiative who are renting or cultivating someone else's property. Tenant farmers are often limited in terms of land-use planning and may not be willing or have authorization to invest in soil and agroforest improvements. Renter's may not gain the owner's permission to plant new trees and likely do not have the final say in whether existing trees are to be cut or not. Land owner's deciding to hunt or traffic wildlife on the property would be another concern. An additional consideration regards what conservation objectives the certification would represent if apiculturalists own land with a low conservation value or use apiary space on another land owner's property. In this latter sense, the apiculturalist may even be urban based and have no say in management decisions on the property where the bees are kept. Would an apiculturalist's educational capacity justify certification? Would these producers constitute a sizeable share of a cooperative? If so, would the cooperative still fall into a 'small-producer' group certification model? These are important questions the SAN should bear in mind when developing criteria for the certification of apicultural production.

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APENDICES

Appendix A. (Contact Information)

Fairtrade Labeling Organization

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Fairtrade Category Innovation Manager

Organic Certification

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Rainforest Alliance Certification

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END NOTES

[i] Honey production in El Salvador is often buffeted by climatic phenomena and geological activity; including hurricanes, El Niño / La Niña, volcanic eruptions and earthquakes (MAG, 2005). For example, in 2004, the sector lost $1.6 million in revenue as a result of the Santa Anna volcano eruption and Hurricane Stan (MAG, 2005).

[ii] In comparison to El Salvador's 0.1 kilogram annual per capita consumption of raw honey, per capita raw honey consumption in Germany and the United States was estimated at 1.1 kilograms and 0.6 kilograms, respectively, for the same period (Monitor, 1998). This higher per capita consumption reflects the use of honey as an ingredient in industrial processed foods (FAO, 1996).

[iii] Apis *mellifera* struggles in 'undisturbed' humid tropical forest ecosystems, where nectar sources tend to be dilute, highly heterogeneous, and unprofitable (Brown, 2001, and references therein). This ecological constraint has been problematic for the promotion of apiculture as a productive conservation tool in newly converted agricultural areas in the American tropics, notably in South America, since, in these situations, the commercial viability of the activity is dependent upon the anthropogenic disturbance the project seeks to curtail (Brown, 2001).

[iv] Archeological evidence suggests that M. *beecheii* colonies have been managed for honey since at least the Pre-Classic Maya period; M. *beecheii* honey was well integrated into regional trade networks prior to European contact (Crane, 1999). For nesting in the wild, M *beecheii* colonies require mature forests and prefer live mature trees with a minimum branch diameter of 25 cm (Cairns *et al*., 2005). Throughout much of its natural range agricultural expansion and timber extraction have severely degraded its habitat, especially in El Salvador. This forest fragmentation has forced a shift in foraging behavior towards secondary-growth plants and eliminated many suitable nesting sites (Villanueva-G et al., 2005). This foraging shift is believed to have increased interspecific competition between M. *beecheii* and introduced A. *mellifera*. This relatively new resource overlap has not been correlated with M. *beecheii* population decline however (Roubik, 1978; Butz Huryn, 1997), but is speculated (Cairns *et al*., 2005; Villanueva-G *et al*., 2005). Wild colonies of M. *beecheii* are now apparently rare in many regions throughout the Neotropics (Villanueva-G *et al*., 2005). The husbandry of this species for small-scale honey production continues in some regions today. Efforts are underway in several Mesoamerican countries to improve M. *beecheii* habitat and promote more sustainable Meliponicultural practices.