

FACTORS THAT INFLUENCE
CACAO FARMERS' AGRICULTURAL
PRACTICES IN JAMUNDÍ, COLOMBIA

by

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A Thesis
Submitted in partial fulfillment
of the requirements for the degree
Master of Environmental Studies
The Evergreen State College
June 2021

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ABSTRACT

Factors that Influence Cacao Farmers' Agricultural Practices in Jamundí, Colombia

Kelsey Foster

Between 1975 and 2000, increasing demand for cacao led to the doubling of world cacao production (Rice & Greenberg, 2000). In 2016 over 4.7 million tons of cacao were produced, and 16% was supplied by the Americas (ICCOa). Colombia is the 11th highest cacao producing nation (Mattyasovszky, 2018) and produced over 60 thousand tons of cacao in 2017 (Mendoza, 2019). Naturally, cacao trees thrive in a forest setting (Grimes, 2009), but the desire to increase productivity has caused a shift towards plantation-style agriculture using hybrid cacao (Middendorp et al., 2018) that often results in deforestation. Between 1975 and 2000 the area of land devoted to cacao cultivation increased by over 2.5 million hectares (Rice & Greenberg, 2000). Minimal literature is available on qualitative aspects of cacao farming in the Americas, specifically in Colombia, a relative newcomer to the international cacao market. Fifty cacao farmers in Jamundí, Colombia were surveyed and six were interviewed to gain information on the factors that motivate cacao farmers' agricultural decisions. Cultural, economic, governmental, and environmental factors were considered during the study. Most of the participants preferred biodiverse farm systems and minimal agrochemical use, with ancestral traditions being a large factor influencing participants' farming practices. Since cacao growing regions in the tropics vary culturally, site-specific information on cacao farmers can inform policy, government programs, aid programs, market incentives, and non-profit organizations to properly benefit small landholder farmers in a difficult and often environmentally destructive industry.

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Acknowledgements

I would like to give thanks to the many people who supported me throughout this project.

Thank you to the cacao farmers of Jamundí who took the time to participate in surveys and interviews for this project. Thank you to Carlos for supporting this project and helping to coordinate the data collection. Thank you, Darley, for doing the work of going from farm to farm to survey and interview individuals for me.

I want to express my gratitude to my reader, Kathleen Saul, for always being supportive of this project through its difficulties. After my research travel plans were cancelled, you worked hard to connect me to someone so that my project could keep going. This thesis would not have been done without you. Your kind words, encouragement, and enthusiasm for my project kept me positive.

My deepest appreciation goes to Renata Moreno Quintero, without whom I would not have completed this project. Your generosity, positivity, and genuine interest in my project allowed me to work on this thesis even though I could not visit Colombia. Thank you for all your time coordinating interviews and meetings, acting as translator, and answering all the many questions I had over the past year. I cannot thank you enough.

Thank you, Dustin, for always calming me when I was overwhelmed, pushing me to continue, and for proof-reading endless drafts. Thank you for supporting me through school and being my biggest cheerleader.

Thank you, Mom and Dad, for your unwavering love and encouragement. This is for you.

Positionality Statement

Since I am studying cultural aspects of Colombian farmers, I must address the fact that I am a white female and U.S. citizen. There are differences between the cultural norms of my home and my place of research, which could potentially cause confusion, misunderstanding, distrust, or resentment between myself and farmers interviewed. Indigenous communities in the Americas have endured a history of structurally embedded colonization, slavery, and cultural marginalization; I have not experienced these traumas personally.

I must also acknowledge that, through access to a university education, I have had opportunities to study abroad. I became interested in the social aspects of cacao farming after a study abroad program in Peru. My educational background in agroforestry, biocultural diversity, environmental justice, indigenous cultures, and ethnobotany grounds my respect for indigenous uses of plants. In researching low-income communities without access to institutions of higher education, I sought to avoid power differentials by adopting social customs when appropriate and by making the survey and interview process as convenient as possible for the farmers and hired a community member to administer surveys and interviews. My research of indigenous cultures and cacao farming has shown that agricultural policy, markets, and supply chains are typically not designed to provide the best benefits to small farmers; through this research I have developed a bias against large-scale agriculture. I address this bias by including arguments and information by individuals who prefer high-intensity agriculture, provide market standards, and/or are higher on the supply chain in my thesis. I also include pros and cons of each agricultural style in my literature review.

Introduction

Cacao, a worldwide commodity projected to increase in production (ICCO WCBP, n.d.), is most commonly used to make chocolate candies, cocoa powder, and cocoa butter (ICCO PC, n.d.). The cacao tree has traditionally grown in a forest setting in the tropics (Grimes, 2009), but increased demand for cacao products has trended cacao agriculture practices towards plantation-style agriculture that uses hybrid varieties of cacao (Middendorp et al., 2018). This intensive style of farming requires more agrochemical use (Useche & Blare, 2013) and irrigation than cacao grown in a traditional agroforestry setting (Bentley et al., 2004). Additionally, the increasing worldwide demand for cacao has led to the deforestation of large areas of the tropics to make room for cacao plantations. Between 1975 and 2000, the amount of cacao produced doubled and the area of land used for cacao cultivation increased by over 2.5 million hectares (Rice & Greenberg, 2000). The destruction of forests in cacao-growing regions is especially significant: the biologically diverse tropics are home to over half of the species in the world (Wright, 2005).

While most of the world's cacao is grown by small landholders (Lynn, 2017), many of these farmers struggle with poverty (VOICE, 2019). Culture, government, regulation, aid, and pricing can vary greatly for cacao farmers who cultivate cacao in many countries throughout the tropics. Thus, it is necessary to enact regionally- and culturally- specific regulations, aid programs, government programs, and trading procedures that will be best suited to benefit these vulnerable groups.

While some literature addresses the influence of culture and region on the cultivation of cacao (Blare & Useche, 2013; Coomes & Ban, 2004; Díaz-Montenegro et al., 2018; Steffan-Dewenter et al., 2007), more research is needed on cacao farmers' distinct cultural preferences for land use and agricultural styles. For example, a study of farmers in Ecuador showed that the farmers preferred agroforestry systems because of a number of benefits, such as access to food and medicinal plants and cultural significance (Blare & Useche, 2013). Another study revealed that many Indonesian cacao farmers preferred agroforestry systems, but financial constraints forced them to intensify their land use and adopt monoculture practices (Steffan-Dewenter et al., 2007). Through an understanding of the driving factors of cacao production, programs and incentives can be designed to appropriately encourage farmers to use sustainable farming methods. With financial incentives, such as increased compensation for shade-grown cacao or product certifications like fair-trade, organic, or Rainforest Alliance, farmers could afford to adopt or maintain environmentally friendly farming practices that will help slow the rapid deforestation of the tropics.

This thesis research was designed to provide a platform for the voices of small-scale cacao farmers and to help fill the aforementioned gap in the literature. Through surveys and interviews, farmers in Jamundí, Colombia provided personal information regarding their farming practices and their attitudes towards agrochemical use, shade tree use, hybrid vs native varieties of cacao, and native flora and fauna. An understanding of the preferences, struggles, and needs of small-scale cacao farmers in this community could help aid programs, the government of Colombia, and international specialty chocolatiers to provide culturally appropriate aid. This understanding could build

relationships to alleviate the financial strain that is often associated with growing cacao and encourage sustainable cacao production.

As the world faces alarming rates of tropical forest loss, some agricultural systems offer a glimmer of hope. In particular, agroforestry, where crops are cultivated in association with trees, provides some of the ecological benefits of natural forest while allowing farmers to make a living off their land.

-Rice & Greenberg, 2000, p. 167

Literature Review

Introduction

Theobroma cacao, a tree grown in the tropics, produces seeds used in the production of chocolate. While farmers in the global south produce this commodity, people in the global north are the predominant consumers of cacao products (VOICE, 2019). Small landholder farmers produce 85% of the world's cacao (Lynn, 2017), and most struggle with poverty. The cacao industry also struggles with many issues, including child labor, poverty, lack of infrastructure, lack of transparency, climate change, and market dynamics (VOICE, 2019).

Since cacao grows throughout the tropics of the world, many different regional, governmental, environmental, economic, and market factors influence the style of agriculture in these areas. Some studies address social aspects of cacao agriculture (Bentley et al., 2004; Steffan-Dewenter et al., 2007; Useche & Blare, 2013), but more work is needed to gather region-specific factors that will allow for culturally appropriate standards, regulations, aid programs, and system structures so that cacao farmers can earn a living wage while preserving biodiversity, utilizing ecosystem services, and reducing deforestation in the tropics. These culturally appropriate and sustainable factors can alleviate imbalances in the global cacao market that take advantage of the small-scale farmers who provide the foundation of the commodity's business.

Global Market

In 2017 the world average per capita of chocolate consumption was 0.9 kilo per year. The largest consumers in the world, the Swiss, consumed an average of 10.5 kilos

(23.1 pounds) of chocolate per capita that year. Europe, the world's largest chocolate market, had 49% of the global market share in 2017, with North America following at 21% (CBI, 2019).

While ten varieties of cacao have been identified (Burks, 2019), there are three main varieties grown for the market: forastero, criollo, and trinitario. The global market is supplied predominantly by forastero cacao beans from West Africa, predominately grown in full sun. Criollo and trinitario cacao varieties, commonly found in Latin America and the Caribbean, can be grown in shaded areas (Benjamin et al., 2018).

The world cacao market categorizes beans as either bulk or fine flavor. Fine flavor beans are valued for their unique flavors that can include floral, herbal, fruity, and nutty notes (ICCO FoF, 2019). Criollo and trinitario include fine flavor varieties purchased by specialty chocolate markets that have been increasing in number; however, the growth is at a small scale. This specialty chocolate is often associated with certifications such as organic and fair trade (CBI, 2019). In the United States alone, 175 specialty chocolate makers produced in 2018, but these small-scale companies tend to purchase low quantities of beans and do not contribute substantially to the world cacao market (Benjamin et al., 2018).

Between September 2016 and February 2017 world cacao market prices dropped drastically due to oversupply, leading some farmers to lose up to 40% of their income (VOICE, 2019). Some experts believed this oversupply would last for several years. Increased cacao production during this time frame was caused by multiple factors including favorable weather conditions, the increase in cacao farms in previously forested

areas, national policies that stimulate production, and the sector-wide focus on increasing productivity and farmer education (VOICE, 2019). Since then, production has rebounded, as shown in Figure 1 below.

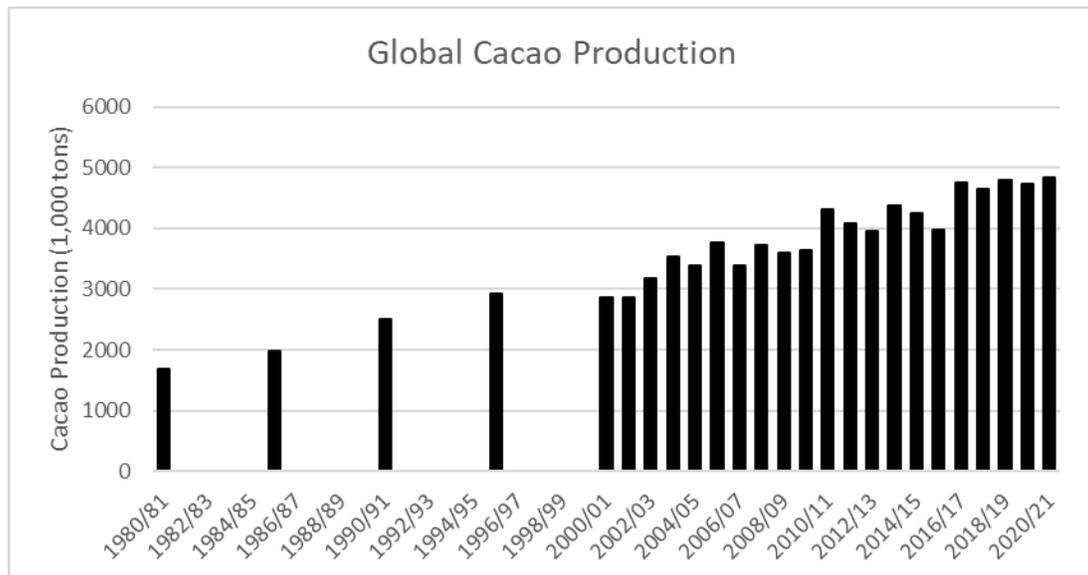


Figure 1. Upward trend in global cacao production (based on data from Shahbandeh, 2021)

Small landholders are fundamental to the chocolate industry (Rice & Greenberg, 2000); 85% of the world’s cacao supply comes from small-scale family farms (Lynn, 2017). However, an imbalance in the chocolate industry allows a handful of large companies to dominate the refined cocoa market. As of 2013, 5-6 million small landholders produced the majority of world cacao supplies while eight traders and grinders had 60-80% of the market share (Kroeger et al., 2017). This concentration of power and the overall structure of the cacao supply chain (See Figure 2 below) can be contributing to the severe poverty and ethical dilemmas abundant in cacao growing

communities across the world.

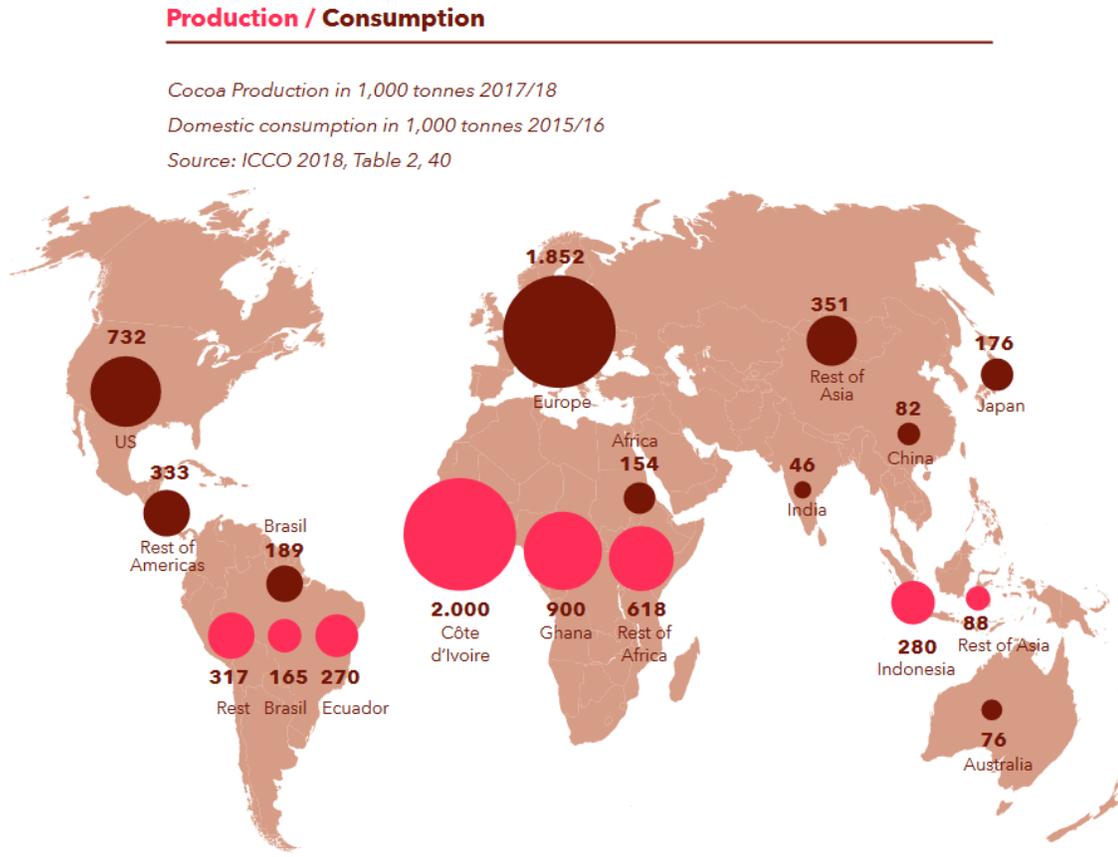


Figure 2. Global Production vs Consumption of Cocoa Products

Source: VOICE (2019)

Latin American Market

Thirteen of the twenty-three fine flavor cacao exporting countries approved by the International Cocoa Organization (ICCO) in 2016 are located in Latin America (ICCO FoF, 2019), with Ecuador supplying 54% of the world's fine flavor cacao in 2006 (Rios,

2016). Native varieties such as chuncho in Peru and nacional in Ecuador attract attention for their high-quality flavor and aroma, and the plants tend to be best suited for traditional shaded agricultural systems (Céspedes-Del Pozo et al, 2017; Loor Solorzano et al, 2012). This shows that cacao growing regions in Latin America have the potential to dominate specialty chocolate markets that tout fine flavor, as well as sustainable farming practices.

The lack of differentiation for fine flavor and bulk beans results in difficulty understanding the trends of the cacao market. ICCO export estimates of fine flavor beans in some Latin American countries such as Ecuador, Peru, and Colombia do not match export reports. For example, although the ICCO estimates that 75% of Ecuador's cacao exports are fine flavor, reports from the Department of Agriculture of Ecuador showed that 72% of exports from 2012 to 2015 were not considered fine flavor. Similarly, as the ICCO estimates that Colombia exports 95% of its beans as fine flavor, Colombian export data suggests that between 2012 and 2016, 77% of exports were bulk beans. No international standard exists for differentiating the price of premium and bulk cacao beans; higher prices for fine flavor cacao are paid through individual transactions between specialty exporters and suppliers or via direct trade (Benjamin et al., 2018). Without differentiation between qualities of cacao, market information remains unclear and farmers have no financial incentives for growing fine flavor varieties.

Colombian Market

Colombia has a unique cacao market; while most cacao producing nations export a majority of their beans outside of cacao-growing regions, Colombia's cacao production focuses on meeting domestic demands. A staple of Colombians' diets, chocolate is

commonly consumed as chocolate de mesa, or drinking chocolate, which typically consists of cacao solids, palm oil, sugar, and flavors such as vanilla, cinnamon, or cloves. Along with chocolate de mesa, Colombians consume chocolate candy bars, predominantly produced by two companies: Casa Luker and Nutresa (Benjamin et al., 2018). The domination of the Colombian chocolate market by these two large companies leaves small cacao farmers vulnerable to the loss of economic and environmental sustainability, which demonstrates the importance of gaining regional and cultural information on cacao farmer preferences.

The importance of chocolate to Colombians is shown in the comparison of Colombia's cacao imports and exports. While the country generated US\$129 million from cacao exports, it spent US\$147 million on cacao imports between 2007 and 2015. While Colombia previously mostly imported cacao to meet domestic demands with minimal export, it has increased exports due to the government's encouragement of cacao farming expansion. Colombia exported over 33,000 metric tons of cacao to 25 countries between 2012 and 2015, nine more countries than the previous five years. This resulted in US\$95 million in revenue (Benjamin et al 2018).

Cocoa Supply Chain

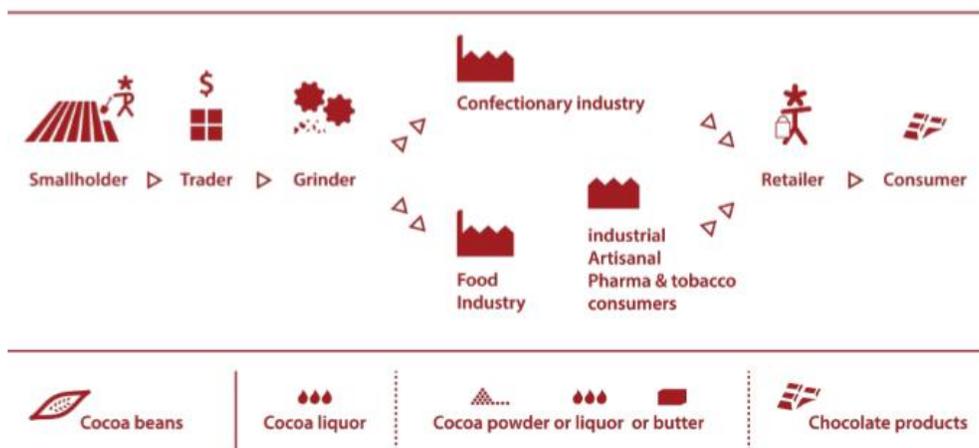


Figure 3. Cocoa Supply Chain

Source: Cacao Barometer 2012, Found in Kroeger (2017)

First in the supply chain, farmers receive a small payment compared to the amount received for the final product of high-end chocolate bars. Additionally, the further from a collection center a farmer is, the more they spend on transportation, reducing their profits. In regions where cacao is less commonly or newly grown, supporting infrastructure is less developed, leaving farmers vulnerable to exploitation by traders, who are less abundant in these regions (Benjamin et al., 2018). In a study of the Colombian cacao market by Benjamin et al. (2018), variation in the growing regions led the authors to recommend region-specific approaches to production that would acknowledge differences across cacao growing communities. For example, actors within the cacao sector should collaborate to ensure farmers receive access to farming technology, financing, and transparent buyer relationships, while “extension and technical assistance approaches should be adjusted for specific regions, promoting

production systems and best practices that fit within the regional context (Benjamin et al., 2018, p. 101).” The authors also suggest that pricing schemes to differentiate high-quality and low-quality beans will incentivize farmers to produce the qualities and quantities of beans needed (Benjamin et al., 2018).

Agroforestry

While the origin of *Theobroma cacao* has been debated, Motamayor et al. (2002) state that cacao most probably originates in the upper Amazon of South America near the Colombia-Ecuador border. The upper Amazonian region, including Peru, Brazil, Colombia, and Ecuador, also includes highly genetically diverse cacao (Thomas et al., 2012). Since cacao is native to Latin America (Motamayor et al., 2002), native varieties are well-suited to grow in agroforestry systems. Agroforests mimic natural forest structures but allow for the production of crops in multi-tiered canopy systems. Tropical farmers can grow products such as cacao, coffee, bananas, nuts, and flowers while maintaining the forest’s ecosystems services (Blare & Useche, 2013).

Agroforestry systems can be less profitable than monoculture systems because of less intense use of the land, but a study in Ecuador by Blare & Useche (2013) showed that farmers preferred agroforestry systems for the biodiversity, ecological benefits, access to food and medicinal plants, and its cultural importance. In addition to these benefits, agroforests can provide habitat for animals hunted for food, which bolsters farmers’ self-sufficiency (Díaz-Montenegro et al., 2018). A study of Indonesian cacao farmers by Steffan-Dewenter et al. (2007) showed that although the farmers preferred agroforestry practices for the ecological benefits, they struggled financially, which could

lead to land intensification; market-based incentives are essential to ensure the continuation of shaded agriculture.

Because of the lack in market price differentiation between fine flavor and bulk cacao as well as increasingly productive hybrid cacao varieties (Bentley et al., 2004), farmers across the tropics find more intensive farming practices that remove shade trees appealing (Steffan-Dewenter et al., 2007). This shade-less agriculture that produces bulk cacao beans supplies more than 76% of the world's cacao supply (ICCO QB, 2019).

While hybrid varieties tend to be more productive than native varieties, production can be short-lived, crop uniformity increases vulnerability to pests, pathogens, and the effects of climate change (Useche & Blare, 2013), and the agricultural practices involved have negative environmental effects (Steffan-Dewenter et al., 2007). Compared to monoculture, agroforests require less irrigation (Bentley et al., 2004) and agrochemicals; the natural forest structure limits the spread of pathogens, inhibits weed growth, provides organic matter that enhances soil quality, and maintains soil moisture levels (Useche & Blare, 2013).

Despite the benefits of agroforestry, forests and their biodiversity have suffered from the increase in cacao agriculture throughout the tropics. Since 1960, global cacao production has quadrupled, causing deforestation throughout Latin America, Indonesia, and especially West Africa, the world's most productive cacao growing region. Because of the increase in agricultural land and the lack of government enforcement of many protected areas, more than 90% of West Africa's original forests have disappeared as a result of the "slash-and-burn" practice of removing vegetation in forested areas to allow for agricultural use of the land (VOICE, 2019). Virgin forests commonly get cleared and

intensely farmed until cacao trees become too old to produce and soil nutrients have been depleted. Once the land has been exhausted, farmers continue moving further into forests to continue the cycle of deforestation (Bentley et al., 2004). One example of agricultural deforestation is United Cacao's clearing of 2,000 hectares of Peruvian rainforest for a cacao plantation in 2012. Estimated net carbon emissions from land use change of this plantation during its production lifetime is 660,000 metric tons of carbon dioxide, roughly the same emissions total as driving a car 60,000 times around the earth (Harris et al., 2015).

Compared to the “big four”- oil palm, cattle, soy, and wood products- cacao's deforestation impact remains somewhat small; however, cacao's deforestation impact is momentous in biodiverse hotspots such as the Upper Guinea Tropical Rainforest, South East Asia rainforests, and the Amazon (Kroeger, 2017). The tropics contain the most biologically diverse areas in the world (Dirzo & Raven, 2003). The International Union for Conservation of Nature lists more than 28,000 species, 27% of all species, as threatened with extinction (IUCN, 2019), and the tropics support over half of all species in the world. These biologically rich areas are especially at risk from population encroachment, agricultural expansion, and climate change factors; the populations of tropical nations are expected to increase by 2 billion over the next 25 years (Wright, 2005).

Along with the direct human-made threats to tropical forests, climate change is a concerning factor for industries that rely on tropical crops such as coffee and cacao. Climate change projections for 2050 show that the major cacao growing regions in West Africa will experience substantially higher temperatures, longer dry seasons, and

increased risk of drought. As suitable cacao growing areas shift due to climate change, remaining forests will be at risk as farmers move to areas with the appropriate conditions (Schroth et al., 2016). To address climate change problems for cacao farmers in at-risk growing regions, Schroth et al. (2016) recommend crop diversification and the increased use of shade trees to protect cacao plants from high temperatures and provide economic and ecological benefits. Shaded agricultural systems can offer protection from temperature and microclimate extremes and maintain soil moisture, which can reduce risk and food insecurity for small-landholder farmers (Lin, 2007).

Factors Influencing Farmers

While monoculture systems can provide a higher short-term income for farmers than shaded cacao systems, some farmers prefer agroforestry systems (Steffan-Dewenter et al., 2007; Blare & Useche, 2013). Traditional home gardens in the tropics contain crop plants in multi-tiered canopy settings that contain high biodiversity. A study in Peru showed that the average home garden contained 82 species of cultivated plants (Coomes & Ban, 2004). In agroforestry settings, cacao grows among other harvestable plants used for medicine, food, timber, natural fertilizer, or income (Zapfack et al., 2002 as cited in (Bisseleua et al., 2009)). Farmers have expressed preference for shaded systems for the ecosystem services such as nutrient cycling, natural pest management, prevention of weed growth, soil quality, and water retention (Useche & Blare, 2013). Bentley et al. (2004) found that farmers utilized shade systems because of a lack of access to irrigation. Shade prevents water from evaporating from soil, thus reducing the need for irrigation (Bentley et al., 2004).

Land ownership plays an important role in the agricultural use of land; older farms tend to be more biodiverse than younger ones (Coomes & Ban, 2004). Farmers with insecure land rights are less likely to invest in long-term production and more likely to utilize shade-less practices for a more immediate profit. However, some small landholders diversify crops to reduce production and market risk; although less profitable, smaller crops act as insurance in case of crop failure (Useche & Blare, 2013). Shade-grown cacao is more labor intensive than monoculture grown cacao and family members tend to be the primary labor source, reducing the need for hired labor (Coomes & Ban, 2004).

Factors that influence the use of tropical land include cultural beliefs and practices. Land tends to be more forested and diverse in areas populated by indigenous groups who maintain forest cover for cultural and spiritual reasons (Useche & Blare, 2013). A study of agroforests in Indonesia showed a shift from shaded systems to more intensive practices as a high number of immigrants began farming in the area. “Cultural influences by migrant households changed the dominant livelihood strategy from a “food first” strategy...to a “cash crop first” strategy thereby increasing the pressure for forest conversion and intensification” (Steffan-Dewenter et al., 2007, p. 4974).

Market access also can influence a cacao farmer’s decision to switch from shaded to shade-less agriculture. Since farmers often receive the same price for bulk and fine flavor beans, no monetary incentive is available for farmers to practice more labor-intensive agroforestry (Díaz-Montenegro et al., 2018). Farmers can receive a higher premium for fine flavor cacao but accessing the specialty chocolate market can be difficult for small landholders. In a study of Ecuadorian cacao farmers by Useche &

Blare (2013), only 32% of the farmers had access to a non-government-organization-run processing plant that purchases wet cacao beans at premium prices. Organizations that increase small landholders' access to specialty markets are important for ensuring premium payment for fine flavor cacao; rural cacao farmers need better access to support.

Diaz-Montenegro et al. (2018) recommend that market-based compensation will incentivize farmers to practice agroforestry. Along with monetary incentives, certification programs that promote agroforestry should include cultural preferences and education on ecosystem services provided by shaded systems (Steffan-Dewenter et al., 2007). Certification programs such as Rainforest Alliance, UTZ (now part of the Rainforest Alliance), Fairtrade, and Organic, claim to promote ethically and environmentally sustainably grown and traded products. Designed to offer premium prices to farmers and increased access to markets, these certification programs have guidelines to which farmers must adhere and have shown positive effects in the communities in which certifications have been adopted (Rueda & Lambin, 2013). While Rueda & Lambin (2013) state that "price premiums are only one of many elements defining the success of certification", Useche & Blare (2013) explain that "...to truly understand smallholder farmers' production decisions, nonmarket as well as market values must be integrated into the analysis (p. 2)."

Conclusion

In 2016 over 4.7 million tons of cacao were produced (ICCO PCB, 2019) with 60 thousand tons coming from Colombia (Mendoza, 2019), the 11th highest cacao producing nation in the world (Mattyasovszky, 2018). Because of the shift towards shade-less

monoculture cacao many tropical forests, and the biodiversity they contain, have been destroyed. Between 1975 and 2000 the area of land devoted to cacao cultivation increased by over 2.5 million hectares (Rice & Greenberg, 2000). With a projected increase in world cacao production (ICCO WCBP, n.d.), steps need to be taken to minimize destructive agricultural practices.

Minimal literature is available in English on the qualitative aspects of cacao farming in the Americas, yet this information could help shape regulations and programs that emphasize agroforestry practices as a sustainable approach to cacao agriculture. Since Colombia remains relatively new to the international cacao market and most cacao in Colombia grows in shaded systems (Benjamin et al., 2018), a great potential exists for the country to lead in specialty chocolate markets. Infrastructure improvements and price differentiation, along with region-specific approaches, could improve the livelihood for Colombian cacao farmers.

Methods

I originally intended to develop a case study of a cacao-growing community in Colombia while living there between May and July of 2020. Due to the COVID-19 pandemic, my travel plans were cancelled, and I was forced to rethink my methods. Rather than immersing myself in the culture of the community, I hired a Colombian resident to conduct surveys and interviews for me. Surveys and interviews were conducted between September and November of 2020. Because of my limited Spanish-speaking abilities, this research was possible with the help of Dr. Renata Moreno Quintero, who attended and translated interviews and tasked one of her graduate students- Efraim Parra- with transcribing interviews recorded by Darley Paz. I am deeply grateful to these individuals for their support and assistance through this research.

This study provides qualitative and quantitative data related to small-scale Afro-Colombian farmers in Latin America. Since the views of these individuals are often ignored in Western, English language literature, recording their voices was important. While peasant farmers in Latin America are a marginalized group, Latinos of African descent have a long history of social exclusion (Arocha, 1998). Along with this, the design of the international cacao market leaves small-scale farmers vulnerable to financial, environmental, and social struggles; learning first-hand what drives these farmers can encourage a more ethical and sustainable cacao supply-chain.

Study Area

I chose Jamundí as the research area after Dr. Renata Moreno Quintero of Universidad Autónoma de Occidente in Cali, Colombia responded to an email about

identifying a cacao-farming community. Through her relationship with Jamundí farmers, she connected me to organization leaders and community members for interviews, as well as Jamundí resident Darley Paz who I hired to conduct surveys and additional interviews. Jamundí is a municipality in the Department of Valle del Cauca in western Colombia. The particular community of study is an Afro-Colombian community in a rural agricultural area.



Figure 4. Location of Jamundí, Colombia

Credit: <https://www.google.com/maps/place/Jamund%C3%AD,+Valle+del+Cauca,+Colombia/@3.7614763,-77.54675,6.13z/data=!4m5!3m4!1s0x8e309eb12e0877d1:0xc87a434dcab6347e!8m2!3d3.2617697!4d-76.5403266?hl=en>

Participants

Participants of the survey, administered by Darley Paz, included 50 men and women of African descent, all of whom grow and sell cacao. Paz chose these individuals based on access and availability (a convenience sample). Paz also conducted four

structured interviews, with participants chosen based upon willingness of survey participants to extend their participation. Of these interview participants, three were male and one was female. Participants were notified that this research was associated with Professor Quintero of Universidad Autónoma de Occidente, working with a student in the United States. In addition, with Professor Quintero present to translate, I conducted two semi-structured interviews via Zoom. Participants of these interviews were female cacao farmers residing in Jamundí, who were members of a local agricultural organization.

Materials

Surveys consisted of 28 questions, including 5-point Likert Scale questions, ‘Yes or No’, multiple choice, and open-ended questions (See Appendix A). Survey questions covered demographics (income, gender, and size and age of farm), farming practices (use of shade plants, agrochemical use, and varieties of cacao grown), and preferences (biodiversity, native species, and wildlife habitat). Surveys were printed, then dictated and recorded by Paz. After completion of the surveys, they were scanned and emailed to me.

Structured interviews conducted by Paz consisted of 20-25 questions regarding the farmer’s practices, what influences their agricultural decisions, and their opinions on certain plants, biodiversity, and the cacao market (See Appendix B). These interviews, in Spanish, were recorded by Paz and e-mailed to Professor Quintero, who then passed them to graduate student Efraim Parra; Parra transcribed each interview into English and emailed them to me.

I conducted and voice recorded two semi-structured interviews that began with ten main questions. I conducted those interviews via Zoom and included Professor Quintero, who acted as translator. The interviews were conversational and allowed for clarifications and additional questioning based on responses. I encouraged participants to share additional information they found important or interesting. The original main questions included similar topics as the surveys, but conversation led to topics such as the agricultural organization in the community, encroaching farms, climate change, weather of the region, and government agricultural agencies. These loosely structured interviews resulted in rich and unexpected information, contributing greatly to my data.

Note that my survey and interview questions had been vetted through the Evergreen State College Institutional Review Board.

Data Analysis Procedures

During my two semi-structured interviews, I took many notes and typed up key points afterward. I read through each of the transcripts of Paz's structured interviews while taking notes, and compiled a follow-up set of questions for clarifications. Professor Quintero answered my questions by further questioning participants or Paz and clarifying any colloquialisms or terms with which I was unfamiliar.

I used content analysis to uncover the factors that most influence farmers' practices in Jamundí. I coded interviews and open-ended responses from surveys by reading through each survey, the notes from each interview, and interview transcriptions and making note of certain words, phrases, or ideas that were unique, especially emphasized by a participant, or repeated by multiple participants. These codes were

arranged into six themes: ecosystem, agrochemicals, biodiversity, mistrust, tradition, and community ties. I recorded the responses from surveys into an excel spreadsheet. I then recorded the percentages of responses into a chart to identify trends. I present the results of my data analysis in the following chapter.

Results

This section outlines my findings based on quantitative data from surveys and my interpretation of open-ended survey responses and interview discussions. The six themes that were determined through the coding process will be discussed.

Surveys

While 50 surveys were submitted, respondents did not answer all questions in each survey. For example, only 29 people responded to the question: “How important is the inclusion of shade trees on your farm?” Four questions had a 100% response rate, including “How many other plant species do you grow to sell?” Of the survey participants, 52% (n=26) were female and 48% (n=24) were male. The primary crop for 88% (n=42) of the farmers surveyed was cacao, and 100% of farmers reported that they grow and sell 15 or more additional plant species. Farm size ranged from 1,600 square meters to 32,000 square meters, with 80% of respondents farming 10,000 square meters (1 hectare) or less.

Ninety percent of respondents strongly agreed that ‘Biodiverse forest farming is necessary for providing food for family consumption’ and 100% strongly agreed that ‘Biodiverse, forest farming is important to me spiritually/ religiously.’ ‘Strongly agree’ was selected by 96% of respondents for the statement, ‘Biodiverse cacao systems are better for the long-term financial well-being of my family.’ Eighty-eight percent of participants claimed that the inclusion of native forest species within their farm was very important to them, and 100% claimed that providing habitat for wildlife on their farm is very important to them. Table 1 shows the percentages of respondents’ answers to survey

questions regarding timber tree use, chemical use, certifications, and varieties of cacao grown. Table 2 shows varieties of cacao grown by participants. Table 3 shows the demographics of farmers surveyed, including gender, amount of time the farm has been in the family, amount of time cacao has been grown on the farm, and the estimate of 2019's cacao yield in bultos (unit of measurement using large transportation container). The latter three survey questions were open-ended.

Table 1. Response percentages from surveys

	Timber trees	For income	For shade	For nitrogen	For weed management	For erosion control
Yes	24 (50%)	3 (13%)	22 (92%)	3 (13%)	11 (46%)	2 (8%)
No	24 (50%)					
	Cacao primary crop	Use Chemicals	Have certification	Price of cacao has ^ in past 5 years	Grow fine flavor cacao	Higher price for fine flavor/native
Yes	42 (88%)	8 (17%)	0	43 (96%)	24 (57%)	2 (6%)
No	6 (12%)	40 (83%)	49 (100%)	2 (4%)	18 (43%)	33 (94%)

Table 2. Response percentages from surveys, cacao varieties

Varieties grown	criollo	trinitario	forestero	Clones/ hybrid	'traditional'	'rojo'	'amarillo'
number of farmers	40	6	1	13	1	2	2
	80%	12%	2%	26%	2%	4%	4%

Table 3. Survey participants' demographics (numbers listed are numbers of participants)

Gender	Female	Male								
	52%	48%								
	(26)	(24)								
Size of farm	1600 m ²	3200 m ²	4800 m ²	6400 m ²	10,000 m ² (1 hectare)	12,800 m ²	16,100 m ²	19,200 m ²	22,400 m ²	32,000 m ²
	5	10	4	9	12	5	1	2	1	1
Years farm has been in family	'Lifetime'	0-19	20-39	40-59	60-79	80-99	100+			
	8	6	8	8	1	2	18			
Age of cacao trees	'Lifetime'	0-19	20-39	40-59	60-79	80-99	100+			
	0	22	16	7	2	0	2			
2019 yield of cacao (in bultos)	0.5	1	1.5	2	3	5	6	7	9	18
	5	15	4	12	2	5	2	1	1	1

Interviews

Six main themes emerged while analyzing interviews and responses to open-ended questions from surveys: community ties, tradition, mistrust, biodiversity, agrochemicals, and ecosystem.

Community ties:

In one interview, a leader of the local agricultural organization, Palenque5, discussed the importance of community ties. The leader explained that 'mingas' were groups of farmers that collaborate to share work. Mingas, I was told, are common within

Indigenous and Afro-Colombian communities. The whole group works on one farm each week, rotating through each farmer's property. According to the interview participant, this collective work motivates the farmers, eases the workload, and strengthens the community. Along with this workshare, Palenque5 coordinates a tool bank that contains tools, machinery, farming equipment, and fertilizers. The tool bank provides access to expensive supplies that individual farmers may not be able to afford on their own, and provides local access to supplies so that farmers do not have to drive to the city.

Tradition:

A related yet separately significant theme is 'tradition.' When participants were asked why they grow cacao, several responded that their ancestors grew cacao and that it is part of a long tradition that they wish to continue. When discussing the changing land-use of farms neighboring the community, two participants mentioned that they do not want to send their children to the city. They wish to profit enough from their farms to be able to pass the land and traditions on to their children.

Mistrust:

'Mistrust' came up several times in interviews. Farmland surrounding the community had once been dominated by rice cultivation, but the transition to sugarcane around 2000 brought destructive practices such as flooding neighboring fields, damming waters to restrict neighbors' use, aerial spraying of glyphosate, and burning fields for easier harvest. One participant discussed her mistrust of the regional environmental authority for ignoring repeated complaints by community members regarding health and crop problems caused by the sugarcane farms. Another participant's family was forced to

sell their farm to sugar growers because a neighboring sugar farm dammed the water supply, resulting in the family farm's financial devastation. Participants also mentioned that the farmers and employees of the sugar mills come from outside the community, rather than being hired from the local community.

Participants also distrust intermediaries- the individuals who visit farms to purchase cacao, transport it to cities, and sell it to larger companies for processing. Participants stated that cacao prices depend on intermediaries, who sometimes take advantage of farmers. One participant stated that intermediaries sometimes use imperfect scales to weigh beans, shorting the farmer money. Another participant stated that there is no stability in the price of cacao; it fluctuates based on the whims of the intermediaries. Intermediaries "are the ones who screw up the purchase of cacao," according to one interviewee.

Biodiversity:

Survey participants, as well as interview participants, predominantly favored biodiversity. One participant considered biodiversity and native flora and fauna necessary for the wellbeing of the crops, and for keeping the property "part of nature". Fauna, including pollinators, help sustain the crops. Participants explained that biodiversity was important to them because they wanted to preserve traditional farming methods and customs of their ancestors. Several participants stated that biodiversity is important to their long-term financial wellbeing; since they plant and harvest different species at different times, the farmers constantly have producing plants. One interviewee explained

that a biodiverse farm helps them with weed control and saves them money by reducing the need for agrochemicals and weed management.

Agrochemicals:

While participants differed on their use of agrochemicals, most agreed that minimal use is best. Representatives from Palenque⁵ encourage farmers to reduce agrochemical use and instead use organic products; they believe this will result in a cleaner product for harvest. Two interviewees stated that they do not use any agrochemicals. Several farmers use organic matter from their households and farms as fertilizer, with one stating, “cacao feeds itself.” Leaf litter and cacao pods saved after harvest are composted to return to the soil. One farmer admitted that agrochemicals “can’t be good” but they save him time in labor, so he uses them for weed control. One participant said that non-organic chemical inputs are necessary for speeding up the production of his crops, but organic inputs are better because they produce a more nutritious product.

A difficulty faced by some community members is the use of agrochemicals by neighboring sugar cane fields. As one participant explained, sugar cane farmers aerially spray agrochemicals from planes; this method is not precise, and chemicals often end up on nearby properties. This participant stated that the aerially applied chemicals get on their cacao crops and negatively affect the soil. According to the participant, because the sprayed chemicals negatively affect their plants and soil they must now use fertilizers and irrigation.

Ecosystem:

A repeated claim by participants was the quality of the soil and ecosystem of Jamundí. As mentioned in interviews, the farms in this community are near a wetland. One participant explained the flood regime that was very important to the region. Because of the community's location in a flood plain, the land regularly flooded, bringing nutrients to the area that created the "very fertile" soil. However, dams upstream have changed this, making floods unpredictable and under the control of the property owners upstream. Because of this, the participant stated, they now use fertilizer, which they never had to do prior to the dams.

One participant explained to me that because Peru and Ecuador have similar climates to one another, farmers can grow hybrid cacao more easily without shade. However, the unique climate in Jamundí has hotter, drier summers than other regions, so there is more need for shade and irrigation. Another interviewee explained that they benefit from the humidity of the wetland and the easy access to irrigation.

Part of the theme of 'ecosystem' includes the cleanup of the wetland in the community. When Palenque5 became legally constituted in 1997 (meaning the organization was registered and legally recognized by the government of Colombia), the organization received funding from the local environmental authority to clean up the local wetlands that had been greatly harmed by invasive plants that degraded soil and killed fish. Palenque5 has had several different primary goals throughout its history, but the organization currently works to increase productivity for farmers and pushes for organic inputs and maintaining the environment and farming traditions of the community.

In the following section I will discuss the implications of these results and make recommendations based on my findings and previous literature.

Discussion and Recommendations

In this section, I will discuss the results of my research and how they relate to existing literature. I will also make recommendations and suggestions for further research based on my interpretation of survey and interview responses.

In the results of this research, the theme of ‘biodiversity’ was sometimes linked to the theme of ‘tradition’. Several participants stated that they grow cacao because their ancestors did, and that they prefer biodiverse farming because they are continuing their family’s tradition. The answer ‘lifetime’ was written in the open-ended questions ‘How long has the farm been in your family?’ and ‘How long has cacao been grown on the farm?’ eight and seven times respectively, indicating the value of continuing tradition on participants’ farms.

Biodiversity was also important to participants for reasons of self-sufficiency. Diverse home gardens are important for the survival of these low-income farmers; regularly producing crops provide food security. Participants reported growing food crops such as bananas, yucca, orange, cassava, peppers, tomatoes, beans, squash, plantain, and various citrus. Since 100% of survey participants indicated that they grow 15 or more species of plants for sale, continually having products for sale seems crucial for the economic well-being of the farmers in this community. By having diverse farms and home gardens, farmers are able to regularly sell a diversity of crops as well as produce much of their own food, reducing the need to buy food elsewhere.

By reading through interview transcripts and notes, there seems to be a general mistrust of the cacao supply chain by some participants. As mentioned in the results

section, several participants addressed unethical behavior by intermediaries. This aligns with the explanation of traders visiting individual farms to purchase beans by Benjamin et al. (2018): “This aspect of the supply chain is one most likely subject to abuse, because those remote farmers likely have poor information on current cacao prices (p. 41).”

Cacao farmers in remote areas may be more vulnerable to exploitation by players further down the cacao supply chain. In a separate interview, a participant stated that Fedecacao (The National Federation of Cocoa Growers) has offered training around handling plants but has done little to help the community with commercialization. This seems like a way to keep the cacao supply chain linear (see Figure 2. Cocoa Supply Chain), rather than allowing players to bypass steps, or play multiple roles in that chain. I believe it is because of these feelings of mistrust and lack of business assistance that the representatives from Palenque5, an agricultural organization comprised of local residents, are working to produce chocolates in Jamundí and form alliances in order to sell cacao directly to international specialty chocolate makers.

Similar to the goals of Palenque5, cacao growing communities could work together to form alliances with international specialty chocolate makers. Problems may make forming these alliances difficult such as remote locations of communities, language barriers (especially in communities where indigenous languages are predominantly spoken), and lack of resources and infrastructure (roads, internet and phone service, transportation vehicles). One example of cacao-growing communities connecting with specialty chocolate markets is the company Uncommon Cacao. Uncommon Cacao “owns and operates cacao export companies in Belize and Guatemala that work directly with farmers to produce high quality cacao” (Uncommon Cacao). The company’s

composition allows specialty chocolate makers to purchase single-origin fine flavor beans from farmers that get paid fairly for their work. Organizations or businesses could form similarly to Uncommon Cacao, where they ensure fair payment for sustainably and ethically grown cacao and could work as a more trustworthy middle-man for small scale cacao farmers. A challenge to this is expenses of a company to start such a business, the establishment of relationships between communities and the company, and the relatively small number of specialty chocolate makers who have little market power when compared to corporations like Nestle.

Somewhat connected to the theme of ‘agrochemicals’ is the use of native versus hybrid varieties, since hybrid varieties tend to require more agrochemical use. The use of hybrid cacao trees has become more common in Jamundí in the past few years. One participant explained that native cacao trees take four years to harvest. Native cacao trees can live 80 years or more, while hybrids tend to only live 20 years. Some participants stated that hybrid cacao is easier to manage; since the trees do not get as tall, there is less pruning required and no need for tools to access higher fruit. One participant said that they preferred native varieties because they produced better quality fruit, larger beans, and better weight.

While previous literature suggests that hybrid cacao typically uses no shade (Díaz-Montenegro et al., 2018) and more agrochemicals than native varieties (Useche & Blare, 2013), many farmers in Jamundí use shade for their hybrids due to the unique climate. Only 17% (n=8) of survey participants claimed they use agrochemicals; this, along with the use of shade by many participants, may reduce farms’ environmental impact in the region, since a forest ecosystem is maintained intact. Thus, further research

needs to examine the environmental effects of hybrids in this particular ecosystem. Literature discusses monoculture hybrid cacao in full-sun systems (Blare & Useche, 2013; Díaz-Montenegro et al., 2018, Useche & Blair, 2013) but studying the use of hybrids in a shaded, biodiverse setting could uncover differing environmental effects. Additionally, and likely of interest to specialty chocolate makers, further research should explore the terroir of certain hybrid cacao varieties. For example, comparing the unique tasting notes of a shade-less, monoculture grown hybrid cacao with the same variety grown in the shaded, agroforestry setting of Jamundí could provide interesting results, and possibly place Jamundí-grown beans in a niche in the cacao market.

Regardless of the varieties grown, survey participants repeatedly asserted that Colombia has the best cacao in the world. Criollo, grown by 40 survey participants, was the most common variety, while my survey recorded a total of seven different varieties. A representative from Palenque⁵ stated that all the cacao sold is a mixture of native and hybrid beans, which explains why 94% (n=33) of survey participants stated that they do not receive a higher price for native/fine flavor cacao. Perhaps certain varieties will be more desirable than others once alliances form between the community and international specialty chocolate makers. Ideally, these alliances will allow farmers to receive a higher profit for their beans.

Trends in survey responses show that a majority of the participants feel strongly about maintaining a biodiverse forest farm, including native forest species, and providing habitat for wildlife on their property. One hundred percent of survey participants stated that biodiverse forest farming is important to them spiritually/religiously, and based on interview responses, I believe that the participants of this research feel a deep connection

between their farms, the environment, tradition, and community. Most interview participants want to maintain their family and community tradition of farming cacao, and are looking to local small-scale organizations, such as Palenque5, for assistance in increasing productivity and access to larger, more profitable markets.

The effects of neighboring sugar cane farms on cacao farmers seemed much more complex than I was able to uncover in this time-limited research project. The participants who discussed the negative effects of these neighboring farms (damming of waters that caused dry periods and flooding, smoke from burning sugar cane, and aerial agrochemical application) suggested that the local environmental authority has little interest in the health or financial well-being of community members. I believe it would be in the interest of the government of Colombia, which has indicated a desire to promote and increase its cacao production, to seriously consider farmers' concerns and alleviate tensions between producers within a region. The issue of neighboring sugar cane farms came up late in an interview with two participants. Unfortunately, I was unable to get them to elaborate more on this topic and its seemingly negative effects on cacao farmers in Jamundí. This is an excellent area for further research.

Certain threats, such as expanding sugarcane farms, unethical intermediaries, and a changing environment, make farming an uncertain livelihood for some of the cacao farmers in Jamundí. However, participants seemed to be proud of their cacao, eager to improve farming techniques and production, supportive of their community, and determined to persevere and maintain their ancestors' traditions.

Conclusion

This research was designed to provide an outlet for the voices of small-scale cacao farmers in rural Colombia. During my literature review process, I found few sources that used interviews and/or surveys to convey the attitudes of Latin American farmers regarding their livelihood. My goal was to uncover how and why individuals grow cacao in Jamundí. This was done through surveys and interviews conducted by community member, Darley Paz, in addition to virtual interviews which I conducted with the help of a translator.

The results of this research are similar to findings in previous literature on cacao farming in Latin America; the participants of this research, farmers with long ancestral traditions of cacao harvesting, prefer biodiverse farming for its ecological benefits and cultural significance. Several participants stated that continuing the traditions of their family was an important factor in their farming practices.

Concentrating cacao agriculture in biodiverse forest settings provides environmental benefits such as plant nutrient recycling, soil moisture retention, reduced spread of pathogens, weed control (Useche & Blare, 2013), protection from temperature extremes (Lin, 2007), and carbon sequestration (Middendorp et al., 2018). This method of cultivation also provides social benefits such as spiritual/religious significance, access to medicinal plants (Blare & Useche, 2013), habitat for wildlife, food security (Díaz-Montenegro et al., 2018), timber, and insurance in the case of a single crop's failure (Useche & Blare, 2013). However, the combination of high market demand and the financial instability of small-scale farming communities throughout the tropics has made high-production hybrid cacao varieties more desirable to farmers. With no price

differentiation between hybrid and native cacao varieties to incentivize sustainable farming practices, the transition to environmentally destructive monoculture hybrid cacao seems inevitable for many communities. While Jamundí's unique climate allows farmers to practice shaded growth with hybrid cacao, native varieties, perhaps with unique tasting notes, may disappear in the long run due to increasing market pressure. Further research into the terroir of cacao specifically from Jamundí, which could be time sensitive, could be of interest to specialty chocolate makers.

Díaz-Montenegro et al. (2018) recommend market-based compensation to incentivize agroforestry practices. None of the farmers in this study had certifications such as Rainforest Alliance or Organic, which can be difficult and expensive to obtain and maintain. While price differentiation between hybrid and native cacao varieties could present difficulties in production and maintenance, it could be a good way to financially compensate farmers in remote communities who are using biodiverse forest farming practices. The imbalanced cacao supply chain allows small-scale cacao farmers to struggle financially while large companies at the end of the supply chain profit greatly. Since Latin America contains distinct native, fine flavor varieties of cacao, the potential is great for alliances between farming communities and specialty chocolate makers. Especially with Colombia being relatively new to the international market, the structure of the cacao supply chain could be altered to allow more direct trade between farmers using agroforestry principles to grow fine flavor cacao and high-end chocolate makers internationally.

This study used interviews and surveys to gather information on practices and opinions from Afro-Colombian cacao farmers. Since I was unable to immerse myself in

the community and conduct longer, more in-depth interviews, this research is not as robust as possible. Plenty of areas for further research remain regarding cacao-growing communities' practices, experiences, and preferences. Small-scale cacao farmers in the tropics are integral to the world's supply of cocoa products, and the presence of their voices in English-language Western literature must grow.

This farm has...been passed [down] from the ancestors, and those of us who are from that family have followed. I hope that when my children come, they are the ones who manage it, and later....my grandchildren and great-grandchildren....will also be beneficiaries of these lands.

- Luis Bernardo Ospina, cacao farmer in Jamundí (Translated from Spanish)

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Appendices

Appendix A. Survey Questions (In English):

How large is your farm?

How long has the farm been in your family?

How long has cacao been grown on the farm?

How old are most of your cacao trees?

Is cacao your primary crop?

YES

NO

How many other plant species do you grow to sell?

0-3 4-7 8-11 12-15 15 or more

Biodiverse, forest farming is necessary for providing food for family consumption.

Strongly Agree Somewhat agree Neutral Somewhat disagree

Strongly Disagree

Do you incorporate timber trees in fields? YES NO

If so,

For income YES NO

For shade YES NO

For nitrogen input YES NO

For weed management YES NO

For Erosion control YES NO

Other (open ended)

How important is the inclusion of shade trees on your farm?

Very important Somewhat Important Not Important

Biodiverse, forest farming is important to me Spiritually/ religiously.

Strongly Agree Somewhat Agree Somewhat Disagree

Strongly Disagree

Do you use chemicals (non-organic) on your farm?

YES NO

Chemical inputs (non-organic) are necessary for profitable cacao farming.

Strongly Agree Somewhat Agree Somewhat Disagree

Strongly Disagree

Biodiverse cacao systems are better for the long-term financial well-being of my family.

Strongly Agree Somewhat Agree Somewhat Disagree

Strongly Disagree

Shade-less cacao systems are more profitable.

Strongly Agree Somewhat Agree Somewhat Disagree

Strongly Disagree

The inclusion of native forest species within my farm is important to me.

Strongly Agree Somewhat Agree Somewhat Disagree
Strongly Disagree

Providing habitat for wildlife on my property is important to me.

Strongly Agree Somewhat Agree Somewhat Disagree
Strongly Disagree

Does your farm have any certifications (Organic, Rainforest Alliance, etc)?

Choose: Organic Rainforest Alliance Fair Trade UTZ Other: please fill in
None

If yes: Having a certification increases the price I receive for cacao.

Strongly Agree Somewhat Agree Somewhat Disagree
Strongly Disagree

Where do you acquire plant materials (cacao trees/seeds/seedlings)?

What varieties of cacao do you grow? crillolo trinitario forastero

Do you grow and sell fine flavor/native cacao? If yes, what variety?

If yes: Do you receive a higher price for this than hybrid/bulk cacao?

YES NO

The market price of cacao beans influences the varieties of cacao I grow.

Strongly Agree

Somewhat Agree

Somewhat Disagree

Strongly Disagree

What is the estimate of the price you received for cacao (per kilo) last year?

Has this price increased in the past 5 years?

What is the estimate of cacao yields last year?

Appendix B. Structured Interview Questions (In English):

Why do you grow cacao?

Tell me about your cacao farm.

How long have you been farming here?

How many varieties do you grow?

Do you use any special practices or procedures?

Is your farm unique in any way?

Who are your main customers?

Can you discuss biodiversity on your farm? By biodiversity, I mean a variety of plant species growing in the same area.

How important is biodiversity to your personal farming values?

Do you retain shade trees on your farm? What are your thoughts about shade tree farming?

Do you use any agrochemicals (pesticides, fertilizers, fungicides)? How do you feel about using them?

Do you feel you have good access to cacao markets (bulk or specialty)? Has access affected your farming decisions? How so?

How have certifications (Organic, Rainforest Alliance, etc) affected your farming decisions?

How do you feel about hybrid/bulk varieties of cacao versus native/fine flavor varieties?

What is your perspective on native plants? Does consideration of native plants affect your farming practices?

How do your neighbors' farming practices affect your own farming decisions? Do you feel you are influenced by their practices?

Do you process cacao on your farm?

Are there any changes or actions you would like to see to help your community?