

Worcester Polytechnic Institute Digital WPI

Interactive Qualifying Projects (All Years)

Interactive Qualifying Projects

February 2019

Developing an Association of Sustainable Farmers in Monteverde

Alexander Jeffrey Fair
Worcester Polytechnic Institute

Allyson Rose Kearns
Worcester Polytechnic Institute

Jacob Michael Bader
Worcester Polytechnic Institute

Kathleen Dianne Peter
Worcester Polytechnic Institute

Follow this and additional works at: <https://digitalcommons.wpi.edu/iqp-all>

Repository Citation

Fair, A. J., Kearns, A. R., Bader, J. M., & Peter, K. D. (2019). *Developing an Association of Sustainable Farmers in Monteverde*. Retrieved from <https://digitalcommons.wpi.edu/iqp-all/5325>

This Unrestricted is brought to you for free and open access by the Interactive Qualifying Projects at Digital WPI. It has been accepted for inclusion in Interactive Qualifying Projects (All Years) by an authorized administrator of Digital WPI. For more information, please contact digitalwpi@wpi.edu.



WPI



Productores Sostenibles de Monteverde



Developing an Association of Sustainable Farmers in Monteverde

An Interactive Qualifying Project Report Submitted to the Faculty of WORCESTER POLYTECHNIC INSTITUTE in partial fulfillment of the requirements for the Degree of Bachelor of Science by

Jacob Bader
Alexander Fair
Allyson Kearns
Kathleen Peter

Submitted to:

Project Advisors:

Professor Melissa Belz, PhD.

Professor Courtney Kurlanska, PhD.

Project Sponsor:

Noam Sirota

Submitted on:

27 February 2019

This report represents the work of four WPI undergraduate students submitted to the faculty as evidence of completion of a degree requirement. WPI routinely publishes these reports on its website without editorial or peer review. For more information about the projects program at WPI, please see:

<http://www.wpi.edu/Academics/Project>



WPI



Productores Sostenibles de Monteverde

Developing an Association of Sustainable Farmers in Monteverde

Executive Summary

Jacob Bader, Alexander Fair, Allyson Kearns, Kathleen Peter

Abstract

Monteverde, a town located in the mountains of Costa Rica, relies heavily on the import of produce to meet the demand of an ever-increasing population of tourists. This project, sponsored by a local farmer, explores how an Association of Sustainable Farmers could increase the use of local and organic produce within the region. Interviews with local farmers and consumers of agricultural goods were conducted to learn how the local agricultural community could be supported, in a way which will enable farmers to meet local produce demands. We developed a blueprint for the creation of an Association of Sustainable Farmers which provided recommendations for the structure and operation of the association.

Since 1988, tourism to Costa Rican towns increased 585% — and with a surge in tourism comes a sudden and significant demand for agricultural goods (Dunahay, 2014). To cope with the increased demand for goods, towns such as Monteverde began relying heavily on imported produce, both from other countries, as well as other regions of Costa Rica (Stuckey et al., 2014). However, the import of produce to the area hinders the local economy by creating competition against local farmers, which leads to poverty gaps in rural agricultural communities (Lyon, 2010). Additionally, the import of goods from conventional farms has negative impacts on both the environmental and human health, as a result of increased carbon emissions in the supply chain, and the use of agrochemicals which can pollute water sources (Irfan, 2018, Longnecker et al, 1997).

To combat the negative impacts of imported produce, community members can support local

sustainable farms. These farms consciously seek to reduce the negative impacts of conventional farming practices, while still meeting the demand of the community (Brodt et al, 2011). Many small producers have turned to forming associations and cooperatives to compete in the global market. The formation of these groups provides farmers with an increased voice within politics, and greater opportunities within the local economy (Stuckey et al., 2014, Staatz, 1987).



Figure A: Sustainable Farming Practices on a Monteverde Farm

To support local agricultural production Noam Sirota, an organic farmer in San Luis, has proposed the implementation of an Association of Sustainable Farmers. The goal of our project was to create the blueprint for such an organization within Monteverde. This organization will unite small farmers of the area, align crop production with the demands of local enterprises, improve local production capabilities, and develop an outlet for discussing issues unique to sustainable farming in the Monteverde microclimates.

Methods

We conducted semi structured interviews with 12 farmers in Monteverde and San Luis to determine the varieties and quantities of crops local farms can produce. We gauged whether or not these farmers would be interested in joining a network of farmers, and what types of services they would be interested in receiving from such a group.

Previous research within Monteverde found that consumers are not buying local organic produce because they are unsure of how to access it (Cardona, et al., 2018). We were able to obtain this data and analyze it as relevant to our project. Additionally, to better understand regional access to local produce, we interviewed 15 hotels and an organic foods store in Monteverde about their produce use. We also interviewed 7 families, who are customers of a weekly organic farmshare service, as well as the operator of the service.

To gain a better understanding about the formation and function of associations, we analyzed the governing documents of 12 agricultural organizations, both in Costa Rica and other parts of the world. We used data on the structure, formation, and bylaws of these associations to develop a potential governing document for an association in Monteverde. Additionally, we interviewed two cooperatives in Monteverde, as well as two agricultural organizations in other parts of Costa Rica.

Finally, we interviewed potential resources for the association, based on farmers' feedback. These included a commercial seed supplier, a small-scale commercial compost supplier, and an agricultural market expert.

Findings

A wide variety of crops can be grown in the Monteverde region.

Forty-two different crops are produced in Monteverde. Many of these crops are grown for personal or family use, with surplus being sold, traded, or given away to other local families. There are farmers at many different elevation levels in the region, which allows for a wide range of products to be grown and provides opportunity for local farmers to occupy a larger share of the market than we had initially thought.

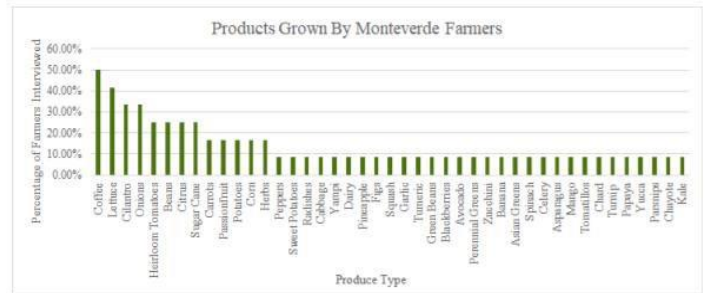


Figure B: Results of Interviewing with Farmers

Local perceptions of “organic” differ from standardized organic certification practices.

Sixty-seven percent of farms self-identified as organic, but of those farms, none held an organic certification. These farms use organic practices, until a problem arises that they do not know how to solve with organic methods. Additionally, consumers have a skewed view of the meaning of organic, as multiple hotels were under the impression that hydroponic growing techniques are organic. Hydroponic practices, while sustainable, are not recognized as organic by certification organizations (Cornucopia Institute, 2015).

Farmers in Monteverde lack access to important resources, which prevents the capacity to diversify products.

Monteverde farmers would be able to improve their production, as well as the variety of crops they are capable of growing, if they had access to resources such as communal tools, high quality seeds, and organic compost. During interviews, 50% of farmers expressed that they would be willing to grow more, if they knew that it could be sold. Another 33% of farmers responded that they would potentially grow more if they had greater access to necessary resources.

Many hotels want to purchase from local farms but are unsure how to contact them.

Of the 14 hotels we interviewed, 6 stated that their reason for purchasing local produce was to provide

support for the community and its economy. Five hotels reported that they prefer the freshness and quality of the products available locally. However, even hotel which sources some products locally, do not take full advantage of the variety of crops grown in Monteverde. Instead, they purchased from one large local farm, and supplemented the rest of their produce from outside sources. A majority of the hotels we interviewed expressed interest in replacing more of the produce that they currently import with local produce.

There is a market for local organic produce within the local community.

One hundred percent of the current customers of the farmshare service said that purchasing local produce was either a priority, or at least a preference. Through an additional interview with a market expert we were able to confirm that there is a market for local organic produce, and that consumers are willing to pay more for this produce.

There is sufficient desire for an Association of Sustainable Farmers in Monteverde

Ten out of twelve interviewed farmers said that they would be interested in joining an association of sustainable farmers. These farmers expressed an interest in improving communication with businesses, as well as other farmers in the region. Additionally, those interviewed expressed a desire for specific services such as compost and seed sharing, as well as communal tools and trainings on organic practices.

Recommendations

Recommendation 1: The association should be developed in multiple phases

To create this association, we developed a plan using phases which build upon each other. We recommend that this association be named Productores Sostenibles de Monteverde, in order to avoid negative connotations typically associated with the words “association” or “cooperative.”

Recommendation 2: Initially, the association should target a small consumer base.

The quantity of products Monteverde farmers are currently producing is not significant enough to supply multiple large hotels, so we recommend that the association pursue either a few smaller hotels, or local families and stores as the initial customer base.

Recommendation 3: Association members should work to diversify crops produced.

We recommend that growers of the region diversify the production of crops. While coffee is easy to grow and profitable for sale in the region, the association cannot meet the needs of local consumers if the member farmers are producing large amounts of coffee and very small amounts of other produce.

Recommendation 4: The association should work to bring in classes on organic and sustainable farming practices.

We recommend that the association reach out to established training organizations, such as the Instituto Nacional de Aprendizaje (INA) or the Ministerio de Agricultura y Ganadería (MAG), to bring in classes on organic and sustainable farming practices.

Recommendation 5: The association should seek funding from both government and private sources.

We recommend that the association take steps to obtain funding from the government, as well as pursuing grants or investments from private sources. We recommend SailCargo and the Monteverde Community Fund as potential sources for private funding.

Recommendation 6: The association should develop a relationship with organic seed/seedling and compost resources.

The association should develop a relationship with individuals — such as Eric Semeillon, Justin Welch, and Fabricio Camacho — who can provide commercial quantities of organic compost, seeds, and seedlings.

Conclusion

An association of sustainable farmers is a necessary asset in the Monteverde region. This association will combat many of the obstacles which prevent farmers from achieving greater success. When local farmers are supported, and given the resources needed to succeed, the community as a whole reaps the benefits. The alternative would be to continuously rely on imported produce, a decision which is not economically, environmentally, or socially beneficial to the community.

Acknowledgements

We wish to acknowledge the assistance given to us by our sponsor Noam Sirota, as well as our advisors Melissa Belz and Courtney Kurlanska. Additionally, we would like to thank all those who participated in our research including the many farmers, hotels and consumers who allowed us to interview them along with Justin Welch, and Eric Semeillon who were important resources. We also owe many thanks to the Ministry of Agriculture for their assistance in locating local sustainable farmers as well as their support in this endeavor.

Table of Contents

Executive Summary	i
Abstract	i
Acknowledgements	iv
List of Figures	vii
Authorship Table	viii
1.0 Background	1
1.1 Agriculture: Past and Present	1
1.2 Negative Impacts of Moving to Centralized Farming	2
1.2.1 Social Impacts of Moving to Centralized Farming	2
1.2.2 Economic Impacts of Moving to Centralized Farming	2
1.2.3 Environmental Impacts of Moving to Centralized Farming	3
1.3 Alternatives to Centralized Commercial Farming	3
1.3.1 Local Organic Farming	4
1.4 Support Systems for Small Farmers	4
1.5 Associations of Farmers in Costa Rica	5
1.6 The Development of an Association of Sustainable Farmers in Monteverde	6
2.0 Methods	6
2.1 Objective 1: Determine the Regional Demand for and Willingness to Support Local, Sustainably Sourced Produce from the Monteverde Region	7
2.2 Objective 2: Determine the Quantity and Variety of Crops that Local Sustainable Farmers Can Produce from the Region	7
2.3 Objective 3: Determine the Interest of Local Farmers in Membership in an Association of Sustainable Agriculture	8
2.4 Objective 4: Evaluate the Structure and History of Established Cooperatives and Agricultural Organizations	8
2.5 Objective 5: Develop a Multi-Phase Plan for the Creation and Development Stages of an Association of Sustainable Farmers in the Monteverde Region	9
3.0 Findings	10
Finding 1: A wide variety of crops can be grown in the Monteverde region	10
Finding 2: Local perceptions of “organic” differ from standardized organic certification practices.	11
Finding 3: Farmers in Monteverde lack access to important resources, which prevents the capacity to diversify products.	12
Finding 4: Many hotels want to purchase from local farms but are unsure how to contact them	13
Finding 5: There is a market for local organic produce within the local community.	15
Finding 6: Most association bylaws follow the same general format	19
Finding 7: There is sufficient desire for an Association of Sustainable Farmers in Monteverde	20
4.0 Discussion	22
5.0 Recommendations	23

Recommendation 1: The association should be developed in multiple phases.....	23
Recommendation 2: Initially, the association should target a small consumer base.	24
Recommendation 3: Association members should work to diversify crops produced.	24
Recommendation 4: The association should work to bring in classes on organic and sustainable farming practices.	24
Recommendation 5: The association should seek funding from both governmental and private sources as a means to provide additional resources to members.	25
Recommendation 6: The association should develop a relationship with organic seed and compost resources.	25
Conclusion	26
Works Cited	27
Appendix A.....	31
Hotel Interview Questions in English.....	31
Appendix B.....	32
Hotel Interview Questions in Spanish	32
Appendix C.....	33
Farmer Interview Questions in English.....	33
Appendix D.....	35
Farmer Interview Questions in Spanish.....	35
Appendix E.....	37
Consumer Family Interview Questions in English.....	37
Appendix F.....	38
Consumer Family Interview Questions in Spanish	38
Appendix G.....	39
Whole Foods Interview Questions	39
Appendix H.....	40
Results of Hotel Interviews	40
Appendix I.....	41
Results of Farmer Interviews.....	41
Appendix J.....	42
Results of Consumer Family Interviews	42
Appendix K.....	43
Results of Association Research.....	43
Appendix L.....	45
Recommended Phases of Development for the Association.....	45
Appendix M.....	47
Suggested Bylaw Guidelines	47

Appendix N.....	50
List of Potential Consumers	50
Appendix O.....	51
Consumer Produce And Price Data	51
Appendix P.....	53
Fact Sheet about membership in Productores Sostenibles de Monteverde	53
Appendix Q.....	54
List of Interested Farmers.....	54
Appendix R.....	55
List of Resources	55

List of Figures

Figure #	Figure Title	Page #
Figure 1	Products Grown By Monteverde Farmers	10
Figure 2	Are Local Farms Organic?	11
Figure 3	Reasons for Sourcing Local Produce	13
Figure 4	Reasons Why Enterprises in Monteverde Do Not Purchase Vegetables Locally	15
Figure 5	Reasons Why Enterprises in Monteverde Do Not Purchase Fruit Locally	15
Figure 6	Is Local Produce a Priority?	16
Figure 7	Are There More Consumers?	16
Figure 8	Reasons Consumers Buy From Farmshare	17
Figure 9	Produce Purchased By Monteverde Consumers	18
Figure 10	Commonalities in Produce Desired by Consumers and Produced by Farmers	18
Figure 11	Interest of Local Farmers in Joining an Agricultural Group	20
Figure 12	Services Desired from an Association	21

Figure 13	Justin Welch’s Compost Sifter	21
Figure 14	Timeline for Association Development	23

Authorship Table

Section	Author(s)	Editor(s)
1.0 Background		
1.0 Introduction	Kathleen Peter, Jacob Bader	All
1.1 Agriculture Past and Present	Jacob Bader	All
1.2 Negative Impacts of Centralized Farming	Allyson Kearns	All
1.3 Alternatives to Centralized Farming	Allyson Kearns	All
1.4 Support Systems for Small Farmers	Kathleen Peter	All
1.5 Associations in Costa Rica	Alexander Fair	All
1.6 The Development of an Association in Monteverde	Kathleen Peter	All
2.0 Methods		
2.0 Introduction	Allyson Kearns	All
2.1 Determine the Regional Demand for and Willingness to Support Local, Sustainably Sourced Produce from the Monteverde Region	Kathleen Peter, Jacob Bader	All
2.2 Determine the Quantity and Variety of Crops that Local Sustainable Farmers Can Produce from the Region	Kathleen Peter, Jacob Bader	All
2.3 Determine the Interest of Local Farmers in Membership in an Association of Sustainable Agriculture	Kathleen Peter, Alexander Fair, Allyson Kearns	All
2.4 Evaluate the Structure and History of Established Cooperatives and Trade Organizations in Costa Rica	Alexander Fair, Allyson Kearns	All
2.5 Develop a Multi-Phase Plan for the Eventual Creation of and Development Stages of a Future Association of	Allyson Kearns, Kathleen Peter	All

Sustainable Farmers in the Monteverde Region		
3.0 Findings		
3.0 Introduction	Alexander Fair	All
A wide variety of crops can be grown in the Monteverde region	Jacob Bader & Allyson Kearns	All
Local perceptions of “organic” differ from standardized organic certification practices.	Jacob Bader	All
Farmers in Monteverde lack access to important resources, which prevents the capacity to diversify products.	Allyson Kearns	All
Many hotels want to purchase from local farms but are unsure how to contact them	Alexander Fair & Allyson Kearns	All
There is a market for local organic produce within the local community	Kathleen Peter	All
Most association bylaws follow the same general format	Kathleen Peter	All
There is sufficient desire for an Association of Sustainable Farmers in Monteverde	Kathleen Peter	All
4.0 Discussion	All	All
5.0 Recommendations	Kathleen Peter	All
6.0 Conclusion	Allyson Kearns	All

1.0 Background

Since 1988, tourism to Costa Rican towns has increased 585% — and with a surge in tourism comes a sudden and significant demand for produce (Dunahay, 2014). This issue can be seen not just in Monteverde, but globally. Farmers have met the demands of a rising global population by resorting to farming practices which are ecologically and socially damaging, and are therefore not sustainable (Stuckey et al., 2014). This has a negative effect on smaller regions, such as Monteverde, which rely upon agriculture (Evans, 2010). Many enterprises in the Monteverde region import produce from the lower Central Valley, due to a lack of variety in local commercial produce, as a result of a historical push towards monocropping of coffee in the region (Hill, 1964, Stuckey et al., 2014).

To support local agricultural production, a local farmer, Noam Sirota, has proposed that an Association of Sustainable Farmers be developed in the region. The goal of our project was to create a blueprint for this organization. This association will unite local farmers and businesses to efficiently grow and distribute goods that have been produced in a sustainable manner. Within our background chapter we go more in depth to explain the ecological impacts of food importation and pesticide use, as well as the current economic situation within Monteverde and the implications of import reliance on their economy. Our methods chapter breaks down the steps we took to complete our research within the country. And finally, our findings, discussions, and recommendations will detail the conclusions of our research, as well as steps for moving forward.

1.1 Agriculture: Past and Present

Historically, farming was among the best, most stable ways to provide for a family (Netboy, 1945). Traditionally, communities relied on the local farms' ability to grow enough food to satisfy the needs of the region. To accomplish this, it was necessary for farms to be reliably capable of the production of a diverse variety of crops. This often included the implementation of practices such as three field crop rotation, where a farm is divided into three separate fields, and crops are rotated to these different fields each year (Lienhard, 1987). This system allows the nutrients of the soil to be replenished without the use of fertilizers, other than animal manure, yet also yield the necessary variety of crops (Lienhard, 1987).

Communities that have traditionally depended on farming are having to change their ways, as younger generations are encouraged to follow different career paths (Stuckey et al., 2014). Today, only two percent of the global population produces enough food for the entire world (Trautmann et al., 2012). Young people rarely choose to become farmers, and this is especially evident in Costa Rica, a nation which relied heavily on local producers, until recently (Stuckey et al., 2014). In the past, Costa Rican communities relied on small farms to meet the demand for agricultural goods, such as fruits, vegetables, milk, and other natural products (Hill, 1964). In the late 1800s, the demand for exported produce, such as coffee and bananas, grew and farms had to increase in size to accommodate for this global demand (Hill, 1964). As Costa Rica began to experience a shift in ideology towards neoliberal, free-market capitalism, the government pushed the practice of monocropping, especially in the higher elevations (Hill, 1964). Monocropping is the practice of growing a significant quantity of only one type of crop, generally for export, rather than diversifying crop yields. In Costa Rica, the practice of monocropping forced farmers to produce goods grown for local consumption in less desirable areas, often further from the consumer (Hill, 1964). In the 21st century, this issue has continued, and many small farmers are

being pushed out of farming by more profitable, large scale, import-export trade (Stuckey et al., 2014). This means farmers have had to either stop selling their products commercially, or find new market niches (Stuckey et al., 2014).

1.2 Negative Impacts of Moving to Centralized Farming

The recent rise of tourism in the Monteverde area has increased the need for agricultural goods, while simultaneously encouraging young people to pursue jobs outside of the farming industry. This contributes significantly to the need for imported agricultural goods (Stuckey et al., 2014). These imported goods are sourced from both other countries, as well as from other regions of Costa Rica, and supplements the quantity of produce grown in Monteverde. Importing produce has effects not just on the farmers, but on the community as a whole. Importation of produce hinders the local economy, and negatively impacts both the environment and human health (Stuckey et al., 2014). As Monteverde becomes more reliant on imported produce, the community experiences alterations in the social structure, such as agricultural jobs being surpassed by careers in tourism as the top industry in Monteverde in 2000 (Stuckey et al., 2014).

1.2.1 Social Impacts of Moving to Centralized Farming

When labor is outsourced and condensed into a centralized location, it lowers the cost of production, and often decreases the purchase price of the product (Sirgy, et al., 2006). This may seem like a positive impact, but outsourcing jobs, such as farming, removes options for local careers and prevents community members from making quality of life improvements (Sirgy, et al., 2006). Additionally, importing produce eliminates the interaction between the consumers and the farmers (Grubinger, 2010). Previously, interaction between farmers and consumers aided in the spread of information about the food, the seasons, and the environment (Klavinski, 2018).

1.2.2 Economic Impacts of Moving to Centralized Farming

Businesses that import goods have benefitted from the shift to commercially farmed goods, but often this comes at the expense of the rest of the community. Money spent on local goods tends to stay within a community, and is reinvested in local businesses (Klavinski, 2018). Additionally, purchasing local produce keeps nearby farms in business, and contributes to the local economy (Evans, 2010). Generally, produce is imported because centralized farming lowers the price of produce, making it more desirable than the local goods. In order to compete with the low prices of centralized crops, small scale local farmers have to charge less for their goods, creating a reduction in profit margins. These shrinking profit margins have created a poverty gap in rural agricultural communities (Lyon, 2010). This contributes to low economic wellbeing within the communities (Sirgy, et al., 2006). This effect is even more pronounced for farmers growing local organic goods, as organic produce requires greater labor to produce, and has a greater risk for failure if not done properly. Therefore, it can be difficult to compete with the low prices offered by imported, conventional goods (Sirgy, et al., 2006).

1.2.3 Environmental Impacts of Moving to Centralized Farming

There are additional disadvantages that result from a shift toward centralized farming. For example, commercial farming has the capacity to harm the environment. Crops grown in centralized, single crop farms are often grown far from the consumer, requiring goods to be shipped long distances. This adds unnecessary carbon emissions to the supply chain. In Costa Rica, two-thirds of all emissions can be attributed to transportation, including the transportation of goods (Irfan, 2018). This contributes to the production of greenhouse gases and pollution.

Additionally, conventional farms — those which use agrochemicals — have a greater impact on the environment than organic and sustainable farms (Cardona, et. al, 2018). Agrochemicals, including pesticides, are used to increase farm yields, and improve crop quality. The insects that pesticides target can develop a resistance after repeated exposure, which requires these agrochemicals to be used more frequently and in higher concentrations. It has been shown that agrochemicals have a negative effect on the environment, as well as human health (Longnecker et al, 1997). Insecticides are designed to harm insects, which can affect the ecological dynamics of the region in which the farm is located. DDT, which has been used in Costa Rica, was found to harm the population of birds such as the bald eagle because exposure to the chemical affected the viability of embryos and chicks (Colburn, 1991). This was only discovered after decades of repeated use. Additionally, it has been found that high level exposure to selected organochlorines, such as DDT, can cause abnormalities of liver function, skin, and the nervous system in humans (Longnecker et al, 1997). As agrochemical use increases, so will the chances of these negative health effects.

1.3 Alternatives to Centralized Commercial Farming

To combat the negative impacts of importing from modern industrial farms, community members can support local sustainable farms, through the purchase of sustainably farmed goods. Sustainable farms are those which consciously seek to reduce the negative impacts brought upon by modern industrial farming practices, while still meeting the demand of the community (Brodt et al, 2011). These farms seek to meet the agricultural needs of the present without compromising the future generations' ability to use the land for farming. To accomplish this, sustainable agriculture weighs equally environmental health, economic profitability, and social equity (Brodt et al, 2011). There are several types of sustainable farms including organic farms, biodynamic farms, and hydroponic farms (Brodt et al, 2011). Maintaining a system of sustainable agriculture is often a delicate balance between the needs of the farmworkers and local economy, and the health of the environment (Agricultural Sustainability Institute, 2019). Sustainable farmers aim to use the natural resources of the region in a way that allows them to regenerate and prevents harm to the surrounding environment (Brodt et al, 2011).

Sustainable farms are more biodiverse than industrialized farms and provide benefits to the community. Unlike large, commercial farms, small farms support the local economy and provide social equity to the community in which they are located (Klavinski, 2018). This is achieved by keeping money within the community and helping to provide jobs, as well as increasing the feeling of pride from eating local (Klavinski, 2018). Purchasing local goods helps to maintain farmland and green spaces within the community, as well as preserve the genetic diversity of the region (Klavinski, 2018). Smaller, multicrop farms grow many different varieties of crops, and have greater consideration for the seasons, land, and food (Grubinger, 2010).

1.3.1 Local Organic Farming

Organic farms are those sustainable farms which are certified by an external agency as being “organic”. Organic farms may use pesticides, herbicides, and fertilizers, but these products must be naturally derived. Additionally, organic farms do not incorporate the use of genetically modified organisms or additives (Biello, 2012). Sustainable farms do not necessarily have to follow these guidelines as they have no certification process.

Under the umbrella of sustainable farming is non-certified organic farming, defined as “agricultural systems that use natural processes, rather than external inputs, to enhance agricultural productivity” (Altieri, 2002). Non-certified organic practices are often used in developing countries by resource-poor farmers (Altieri, 2002). While not certified by external agencies, these organic farms are kept up by farmers who generally cannot afford the synthetic inputs or large plots of land, and many of them are subsistence farmers (Altieri, 2002). However, this practice helps to develop a thriving agro-ecosystem, even if these farmers did not necessarily choose to be organic for any other reason than financial necessity. In Costa Rica, one organic method known as *frijol tapado*, which involves planting beans on steep slopes in mid-elevation areas, produces an estimated 60 to 70 percent of the beans grown in the country, as it is less labor-intensive, and requires no chemical inputs to create a high rate of return (Altieri, 2002). Many of these non-certified organic farmers cannot take advantage of the lucrative “organic” market, as certification is quite expensive and international standards of certified organic practices may be unknown to them (Altieri, 2002). As more individuals have begun to use organic farming practices in developing countries, it has led to the inception of different methods of collaboration between farmers, like associations and cooperatives (Altieri, 2002). However, this practice still represents a small portion of the market in most countries (Altieri, 2002).

There are many benefits that come along with the use of organic farming practices, but there are also important drawbacks to take note of. Organic farms have been found to have higher soil quality, smaller crop size, and a greater risk associated with profitability, because products are smaller, and are more susceptible to being damaged before they are sold, than conventional farms (Cardona, et al., 2018). Local organic farms are also more labor intensive, employ more people, and have a lower profit margin due to the increased expense of production (Reganold et al., 1993).

1.4 Support Systems for Small Farmers

Increased global market competition puts small producers and businesses at a disadvantage relative to large scale, capital intensive farms (Stuckey et al., 2014). Many small producers have turned to forming associations and cooperatives in order to compete in this global market (Stuckey et al., 2014). In this paper association refers to any overarching organization of producers. Cooperative will be used to refer to the specific subset of associations which not only assist in the selling of the farm produce, but also assist in gathering government assistance for the farmers. The formation of these agencies benefits farmers in many ways — namely having an increased voice within politics and the local and global market (Staatz, 1987). According to the International Co-operative Alliance, co-ops have a significant history of generating jobs and profit as well as contributing to a country’s development (Mogrovejo, 2012). Co-ops are a way of uniting small groups of people that share a common goal. An example of this is the Sociedad Cooperativa Cafetalera formed during 1918 in Costa Rica. It was formed to unite small coffee farmers and protect them from the exploitation of larger coffee farmers (Mogrovejo, 2012).

The creation of agricultural associations can often provide financial aid to small scale farmers through competition with the large farming industrial complex (Valentinov, 2007). Associations allow the small-scale farmers to band together so that they can have the political power and voice of their larger agricultural counterparts (Staatz, 1987). More importantly though, it gives them the ability to sell their crops in greater yields (Stuckey et al., 2014). These farmers are able to pool their produce so that they can achieve comparable scale and market power of their larger competition (Valentinov, 2007). Cooperatives lower transaction costs for the small-scale farmers that are members of the organization (Staatz, 1987). Cooperatives can be managed as profitable business units allowing its farms to compete with larger private farms for agricultural markets (Utting & Nannyonjo, 2015). This often means that the cooperative is able to receive more business than the farmers would have individually. With increased access to a definitive, reliable market of consumers the small-scale farmers can make higher profit margins (Stuckey et al., 2014).

Agricultural associations can have added benefits for the greater community as well. If a cooperative is doing well, the additional profits made by the farmers are reinvested into the community through support of local enterprises (Lyon, 2010). Cooperatives also have the option of initiating development projects in environmental conservation, infrastructure improvements, and emergency relief with this additional income (Lyon, 2010).

1.5 Associations of Farmers in Costa Rica

Costa Rica has already seen success with associations of this type. The Talamanca Small Farmers Association (APPTA), founded in 1987, has been a successful unifying body of small, organic cacao and banana farmers located in the southeastern region of Costa Rica (Damiani, 2002). The small farms of Talamanca and surrounding areas were facing difficulty remaining competitive in the cacao market due to their lower production capabilities, partially caused by spread of disease which killed much of their crops. Many farmers resorted to subsistence farming to feed their families, which further reduced the quantities of product available for sale (Damiani, 2002). APPTA's role in changing outcomes for the farmers involved networking with both local and international enterprises in order to create demand for the farmer's harvest. The association worked with both governmental and non-governmental agencies to serve as an advocate for its members. Costa Rica's Ministerio de Agricultura y Ganadería (MAG) officials help organizations like APPTA to access government funds and technical assistance (Stuckey et al., 2014). APPTA was able to create a more stable income system for the farmers by giving them a reliable income through a sale every few weeks. The association was able to obtain an organic certification for all of its members, which helped to relieve pressure on the farmers who may not have had the means to become certified on their own (Damiani, 2002).

Organizations of this type also have been successfully implemented in Monteverde. The Monteverde Milk Producers Association provides technical assistance to farmers and has increased the availability of farming equipment for sale (Stuckey et al., 2014). The Milk Producers Association was started in affiliation with a cheese factory in the area, which created a demand for dairy and increased profits for the farmers.

Outside of agriculture, other professional networks exist in the country that have helped to create opportunities for disadvantaged populations and provided spaces for career development and shared knowledge. The Professional Women's Network of Costa Rica began as an informal interest group of the Women's Club of Costa Rica in 2000 and became a standalone entity in 2015 (PWN By Laws, 2016). The PWN seeks to achieve three initiatives, which include networking amongst professional women and promotion of their businesses, community outreach, and

professional development and guidance for those interested in careers in business (PWN By Laws, 2016). While the main focus of the group is on professional women, the group is open to individuals in good moral standing regardless of gender, age, culture, race, or nationality. The group is set up as a paid membership, and membership dues allow access to many benefits, activities, and opportunities (PWN By Laws, 2016).

1.6 The Development of an Association of Sustainable Farmers in Monteverde

Reliance upon imported produce can lead to small farms being forced out of business. To combat this, agricultural associations and cooperatives have proven to be beneficial to farmers in both Costa Rica and other parts of the world (Damiani, 2002). Noam Sirota, a member of the Asociación para el Movimiento de Agricultura Orgánica del Pacífico Central (MAO-PAC), an organic agriculture organization in the mid-Pacific region of Costa Rica, proposed the idea of starting an association of organic agriculture in Monteverde. However, we soon found that this restricted membership to too niche a population and decided to open membership to all farmers who incorporate the use of sustainable practices. The goal of this project was to understand the needs of Monteverde businesses and consumers, as well as the production capabilities of local sustainable farms. Using this information, we created a blueprint for a successful association of sustainable farmers. The formation of this association will be an important step in moving the community back towards its roots of small, local farming.

2.0 Methods

The goal of our project was to design a blueprint for the implementation of an Association of Sustainable Farmers within the Monteverde region. This association will unite small farmers of the area, align crop production with the demands of local enterprises, and develop an outlet for discussing issues specific to farming in the Monteverde microclimates. This plan was created by researching the needs of the Monteverde farmers and businesses, as well as the factors that have led to the success of similar associations. We accomplished this by breaking the project down into five core objectives.

***Objective 1:** Determine the regional demand for and willingness to support local, sustainably sourced produce from the Monteverde region*

***Objective 2:** Determine the quantity and variety of crops that local sustainable farmers can produce.*

***Objective 3:** Determine the interest of local farmers in membership in an Association of Sustainable Farmers*

***Objective 4:** Evaluate the structure and history of established cooperatives and trade organizations.*

***Objective 5:** Develop a multi-phase plan for the creation and development stages of an Association of Sustainable Farmers in the Monteverde region*

2.1 Objective 1: Determine the Regional Demand for and Willingness to Support Local, Sustainably Sourced Produce from the Monteverde Region

Previous research within Monteverde found that consumers are not buying local organic produce because they are unsure of where to find it (Cardona, et al., 2018). To gain a better understanding of the regional access to local produce, we conducted structured interviews with 14 hotels in Monteverde about their produce use (Beebe, 2014). We decided on structured interviews in order to directly and efficiently obtain the information we sought. We asked questions which gauged the types of produce hotels use in their restaurants, from where the produce was sourced, and the hotel's motivations for purchasing local or organic products (Appendix A and B). We gathered this data by walking into hotels and requesting to speak to individuals who were involved with the hotel restaurants or breakfast services. While we were not able to speak with all of the hotels we had hoped, most were willing to speak with us. These interviews lasted 15 minutes on average. We recorded handwritten notes and input important data into a comprehensive spreadsheet for easy comparison of themes.

Once this data was gathered, we used qualitative content analysis to discern common themes and determine the factors which influenced a hotel's decision about whether or not to source local produce (Beebe, 2014). We identified which products purchased by the hotels were organic or sustainably produced. We then interpreted the interview responses to understand the perception of organic and local products, as well as factors that incentivize the hotels to purchase more products from local sustainable farms. We also determined the farms from which hotels most often purchased their goods.

To gather data about the interests of community members in local produce, we interviewed current customers of a weekly organic produce service. Some of this produce is sourced from local farmers, however it is supplemented by produce that is imported from the Central Valley region of Costa Rica. The interviews lasted about 10 minutes per family, and a total of 7 families were interviewed. We asked the families questions focusing on their organic purchasing habits and willingness to support local organic produce in the future (Appendix E). We logged notes from the interviews and recorded audio when permitted.

After conducting these interviews with consumer families, we analyzed the logs and recordings for patterns in purchasing habits. Additionally, we analyzed the responses to determine how many of the respondents would purchase local organic as well as if they knew of other potential consumers.

To gain a broader understanding of the local agricultural market, we spoke with the coordinator of the organic produce service, as well as the owner of a local agricultural goods store. These conversations were based around some common questions in order to gauge whether or not they felt there was a market for local organic goods, as well as what knowledge they could share on the current purchasing habits of local consumers (Appendix G).

2.2 Objective 2: Determine the Quantity and Variety of Crops that Local Sustainable Farmers Can Produce from the Region

We used semi-structured interviews with farmers to determine varieties and quantities of crops local farms can produce. We interviewed 12 individuals from a list of 14 local sustainable farmers provided to us by the Ministry of Agriculture. The interviews lasted approximately 30 minutes, and often took place at the farm. We asked the farmers about which crops they grow on their farms, and in what quantities. We also asked whether or not they sell any of their produce.

Additionally, we asked farmers if they would be willing to grow more produce based on the demand of consumers to gauge their potential future production capabilities (Appendix C and D). The interviews were logged, and recordings were taken with permission.

We analyzed our logs and recordings using qualitative content analysis techniques (Beebe, 2014). The logs were analyzed and coded to determine themes. Our analysis included compiling a list of produce grown by farmers in the region.

2.3 Objective 3: Determine the Interest of Local Farmers in Membership in an Association of Sustainable Agriculture

To create a plan for the development of an association of sustainable farmers, we sought to determine if there are farmers interested in joining such an organization. In addition, we determined which services would be beneficial to the prospective members of this group. The data for this objective was gathered as part of the interviews discussed in Objective 2. We asked the farmers if they had a network of farmers that they already communicate with as well as whether or not they had prior experience with associations. We also asked if they would be interested in joining a group of other farmers in the area. Additionally, we asked which services they would be interested in receiving from such a group and if they would be interested in organic certification or classes on organic farming practices. We took notes during the interviews to form a log as well as recorded the audio of the interviews with permission.

We used qualitative content analysis to analyze this data. First, we reviewed the interview logs, and then coded them looking for themes of what the farmers would like to see from the organization (Beebe, 2014). As we identified the themes we determined the most important services the farmers wanted from this organization. Rather than looking at specific word counts, we looked at the number of interviewees who mentioned the category of service (Ryan & Weisner, 1998). We asked questions about the specific services of organic certification and organic farming practice classes and applied frequency analysis to the responses to these questions to determine their popularity as service options. Additionally, we used this same method of frequency analysis to take note of how many of the interviewed farmers would be interested in participation in an association.

Additionally, we spoke with members of the Ministry of Agriculture to gain a better understanding of whether or not they felt that there was a desire among farmers for an association of this type. This took place during meetings with our sponsor at the MAG office in Monteverde.

2.4 Objective 4: Evaluate the Structure and History of Established Cooperatives and Agricultural Organizations

We used a combination of interviews and literature review to gather information about different cooperatives and agricultural associations. These included organizations in Costa Rica, as well as groups in other parts of the world. To gather information directly pertinent to the development of an agricultural association in Monteverde, we spoke with Guillermo Vargas, a former member of the Monteverde Coffee Cooperative, who was a helpful source of knowledge on the formation and disbandment of the organization. Despite the fact that it is not an agricultural organization, we also spoke with the Comisión de Artesanos de Santa Elena y Monteverde (CASEM), to gather information about an association which is currently operating in Monteverde. To gain a broader understanding of agricultural organizations in Costa Rica, we also spoke to a member of the Asociación para el Movimiento de Agricultura Orgánica del Pacífico Central

(MAO-PAC). We used a semi-structured interview format to determine more information about the formation and operation of these groups (Beebe, 2014). We compared the results of our interviews looking for similarities in their organizational structure, formation, and operation using the method of triangulation of information sources (Beebe, 2014).

Additionally, we were given access to the constitution of MAO-PAC. We translated these documents from Spanish into English and studied them for information on the structure and bylaws of the association, as well as the process of getting organically certified by Eco-LOGICA. Similarly, we studied the documentation and bylaws of 11 other agricultural associations in the United States, Canada, Germany, Ireland, and Australia. We compared the bylaws and operational structure of these organizations through the use of summative content analysis. This process involved coding data for keywords, or themes, and then going back to group information of similar subject matter. Additionally, we compared the way these groups divide profits and which aspects of the groups proved successful, and which aspects could be improved upon in our plan.

Another association which we contacted to gather information from is the Talamanca Small Farmers Association (APPTA) in the southeastern region of Costa Rica (Damiani, 2002). However, due to the fact that this organization is based in a region far from Monteverde, this contact took place through email. Unfortunately, we did not hear back from APPTA, after multiple attempts, and were unable to ask them questions about their formation, operation, and structure.

We also attempted to contact Zarcero, another Costa Rican agriculture organization, but unfortunately did not hear back. However, we were able to get some information about the operation of this group from the two businesses we spoke to, who are long term customers of Zarcero.

2.5 Objective 5: Develop a Multi-Phase Plan for the Creation and Development Stages of an Association of Sustainable Farmers in the Monteverde Region

Due to the complicated nature of forming a governmentally registered association, it was not feasible that we accomplish that task in our seven weeks in Costa Rica. Instead, the final objective of our project was the development of a deliverable, in the form of a multi-phase blueprint. This blueprint included documentation on proposed timelines, contacts for producers and consumers who expressed interested in the association, as well as potential resources. We also provided documentation on market research, recommendations, the steps to becoming governmentally recognized, and a set of proposed bylaws. These documents combined the information gathered from both the consumer and producer interviews and includes multiple phases which will allow this group to continue to develop in the future.

We felt that it was important to complete research on potential resources for the members based off of the desires of farmers. We conducted semi-structured interviews with a commercial seed supplier, a small-scale commercial compost supplier, and a market expert. The questions in these interviews varied based on what services or knowledge the resource could provide. We also attempted to contact a member of the University of Georgia who produces organic seedlings. However, we were unable to reach him, as he was out of the office for an extended period of time. We will provide association members with his contact information, nonetheless.

Additionally, we used data on the structures of other associations to develop a potential governing document and structure for this association. Additionally, we used data on consumer demand to better align producers in the area, as well as recommendations for ways the association can reach out to these consumers on behalf of the member farmers. From our interviews with farmers we were able to determine which services they desired from participation in a group of

sustainable farmers and used it to inform the necessary developmental phases for this group. As much of the methodology of this objective is built upon the findings of the previous four objectives more information will be given in the findings section.

3.0 Findings

The contents of this section cover the key findings of our research in Costa Rica, based on our methods. Our research led us to many interrelated findings. We will first discuss the data that led to our findings, followed by a discussion based on interpretations of the results and our recommendations for moving forward with this project. Our findings are primarily focused on production capabilities and needs of the farmers, market research based on hotel interviews, and the formation and structure of the association.

Finding 1: A wide variety of crops can be grown in the Monteverde region

It is a common misconception that the elevation and microclimate of Monteverde prevents the growth of many crops. However, there are farmers at multiple elevation levels, which allows for a wide range of products to be grown. In speaking with farmers, we noted that there were at least 43 varieties of crops and products that are produced in the region (Figure 1). Through walking around the farms, we were able to observe the variety of these crops, confirming that the farmers have the ability to produce a large variety of goods. A large percentage of these crops are grown for personal or family use, with surplus being sold, traded, or given away to other families. The most common crop sold by Monteverde farmers is coffee, with six out of the twelve farms that we interviewed selling coffee commercially (Figure 1).

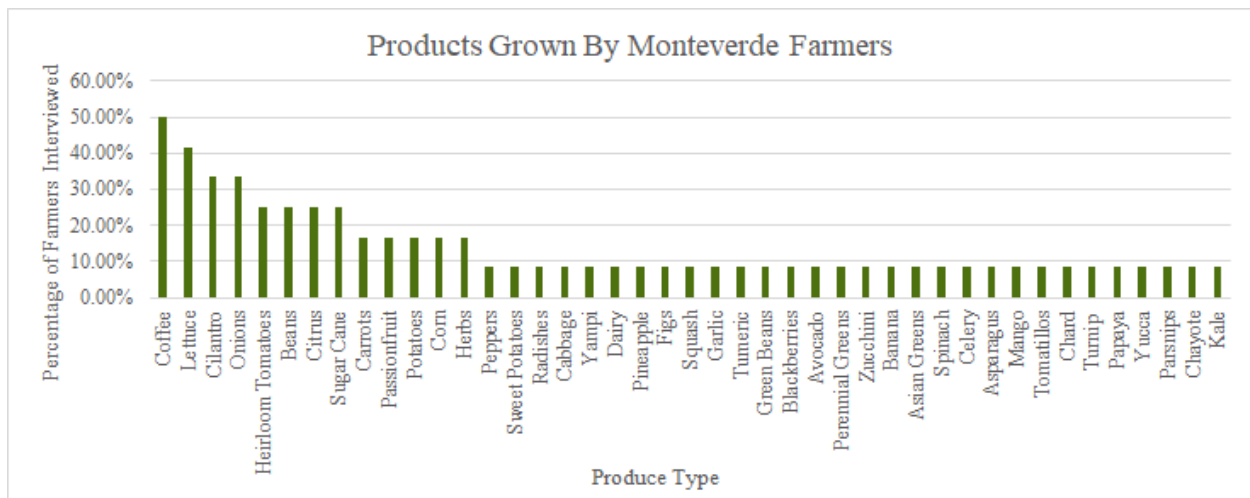


Figure 1: Products Grown By Monteverde Farmers

Thirty of the crops listed in Figure 1 are grown on only one of the interviewed farms in the area. However, if more farms were to grow these products, it is possible that together they could generate quantities large enough to support area businesses. A highly desired crop by tourists, which is able to be grown in Monteverde, is pineapple. One farmer interviewed grows pineapple, although it takes two years to produce a fruit, and the fruits are smaller than ones grown in a more

tropical climate (Figure 1). This farmer expressed a willingness to share the knowledge of pineapple growing with other farmers in the area. Through association networking, it is possible that more farmers could start producing pineapples for sale. Another example is that of a farmer who grows specialty items, such as asian greens and perennial herbs. He has taken advantage of a niche market and has been successful in selling his crops to individuals in the community. This farmer expressed that would like to share his techniques with others in the area. An interview with a market expert, brought light to the fact that local crops would be more marketable if there were a greater variety being produced commercially.

Finding 2: Local perceptions of “organic” differ from standardized organic certification practices.

Through interviews, we learned that 8 out of 12 farmers self-identified as organic, but of those farms, none held an organic certification (Figure 2). Organic, non-certified farms do not require the same level of accountability as certified organic farms. Certified organic farms must track all the seed and additives introduced to their crops, as well as any processing required to create the product. Otherwise, they risk losing organic certifications (Sirota, 2019).

On the other hand, non-certified farms typically use organic practices until a problem arises that they do not know how to solve with organic principles. However, these farms are able to market and sell their produce as organic, even though there is no way to guarantee that these products were not produced using pesticides and other agrochemicals. Additionally, 3 out of the 12 interviewed farms are not technically organic, but instead sustainable. Within this context, sustainable farms are defined as those which are environmentally conscious but do not necessarily use organic practices.

Eight out of fourteen local hotels interviewed purchase their goods from a local hydroponic farmer. Five of the hotels who purchase from this farm refer to this produce as “organic,” and while hydroponics are sustainable, they are not recognized by the standards of organic certification (Cornucopia Institute, 2015). This “reality” is different than the consumer perception that products being sold as organic come from a certified organic farm.

Is Your Farm Organic?

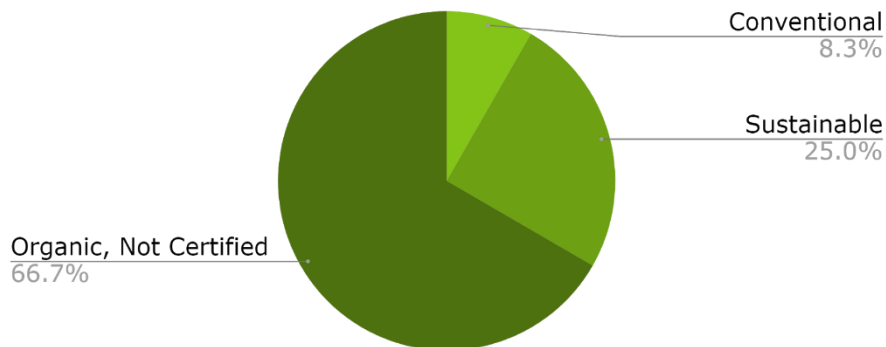


Figure 2: Are Local Farms Organic?

Another important aspect of this finding is that all of the farmers believe in the benefits offered by organic farming practices. All but one of the farmers expressed an interest in trainings

on organic farming practices. Common issues these farmers face include insect infestations and animal invasions. Most farms in the area expressed that they have experienced issues with leaf cutter ants, and we spoke with one farmer who had a recurring armadillo issue.

Nine out of twelve farmers expressed an interest in becoming certified organic but stated that this has not been feasible due to the prohibitive cost of certification. It was also discovered during the interviews that group organic certification is cheaper than an individual farm getting certified.

Finding 3: Farmers in Monteverde lack access to important resources, which prevents the capacity to diversify products.

Monteverde farmers would be able to improve their production if they had access to resources such as high-quality seeds, organic compost, and communal tools. When asked if they would be willing to grow a greater quantity of produce, 50% of farmers said they would be willing to grow more if they knew there was a demand for it. Another 33% said they would potentially grow more if they had greater access to the aforementioned resources. Of the farmers we spoke to, all but one were interested in trainings on organic solutions for common problems, such as insect and fungus infestations.

A lack of high-quality seeds exists across Costa Rica, and it is especially prevalent in Monteverde. A local prospective gardener shared with us that “[she had] been talking to everybody here about where to find seeds and plants... [but] it’s not just a store that you go to and pick up a seed packet, you have to interact with a farm co-op.” This problem does not just affect small scale home gardeners, either. Half of the farmers interviewed grow a narrow variety of crops, because the seeds from their previous harvests are the only seeds to which they have access. Others are bringing in seeds from San Jose, because they do not believe seeds of comparable quality can be obtained in Monteverde. Another significant problem regarding seeds is that in order for the crop to be organic, the seeds are also required to be organic. This exacerbates the problem of seed availability within the Monteverde region, since 67% of farmers try to keep their products organic. Another farmer suggested that some way of communicating about seeds needs to be set up among farmers. This farmer also mentioned that there is a seed store in San Jose but went further to say that some farmers do not have the means or time to get to San Jose. During the interview, she mentioned that “if [farmers] had a WhatsApp forum it would be wonderful,” suggesting that better communication among farmers would help to alleviate the difficulties of obtaining seeds.

We also found that two farmers specifically identified a lack of compost as a hindrance to their production capabilities and had greater faith in their ability to produce organic products in the future, if they were able to purchase organic compost.

The tools found on Monteverde farms are relatively basic compared to modern standards, and much of the labor is still done by hand. For example, the team visited a farmer, who expressed that he, and others in the area, were limited by the time and labor required to produce more, because of the manual labor associated with production. This farmer mentioned that he had to manually turn soil in his fields during the planting season, which greatly reduced his capacity to plant more. He specifically mentioned that this limitation would be lessened if he had access to tools, such as a rototiller. Additionally, farmers expressed that the man hours they can provide are finite, and this is intensified by a lack of tools which could expedite many labor-intensive practices. These production issues are further worsened by the fact that younger people less frequently consider

farming as a career. One farmer referred to the agricultural sector of Monteverde as an “endangered culture.” Another farmer expressed that she may have been able to produce more if she had help on her farm, but her children have no interest in learning. She found this to be very different from when she was growing up and discussed a general aversion to farming in the younger generation. Farmers cited the younger generations disinterest in farming as a response to the recent rise in tourism to the Monteverde region. According to the farmers, the tourism industry is a lot more attractive because the money is more reliable, and the work is less labor-intensive.

The only foreseeable limitation to this finding, is that we only interviewed 12 farmers in the region. However, we were given the contact information for these farmers by the Ministry of Agriculture and our sponsor, and we interviewed all those who responded to our requests. We feel as though we surveyed a wide range of farmer demographics including old and young farmers, men and women, and individuals who have resided in Monteverde for both long and short amounts of time. This provided us with diverse input, however, we cannot draw community wide conclusions based upon these interviews alone. Our struggle in contacting these farmers exemplifies the need for an association in this region which can serve as a network for local farmers and consumers so that it is easier for them to contact each other.

Finding 4: Many hotels want to purchase from local farms but are unsure how to contact them

Of the 14 hotels interviewed, only 10 gave reasons for purchasing local produce. The top reasons they provided were support local economy, freshness, quality, and price (Figure 3). Eight of the hotels sourced their greens directly from one particular local farm, and supplemented the rest of their produce, such as tropical fruits, from sources outside of the Monteverde and San Luis region (Appendix H). Additionally, the hotels were sourcing their coffee from diverse sources including Cafe San Luis, Cafe Turin, 1820 brand coffee, and an unnamed coffee company which supplies the coffee machines as well (Appendix H).

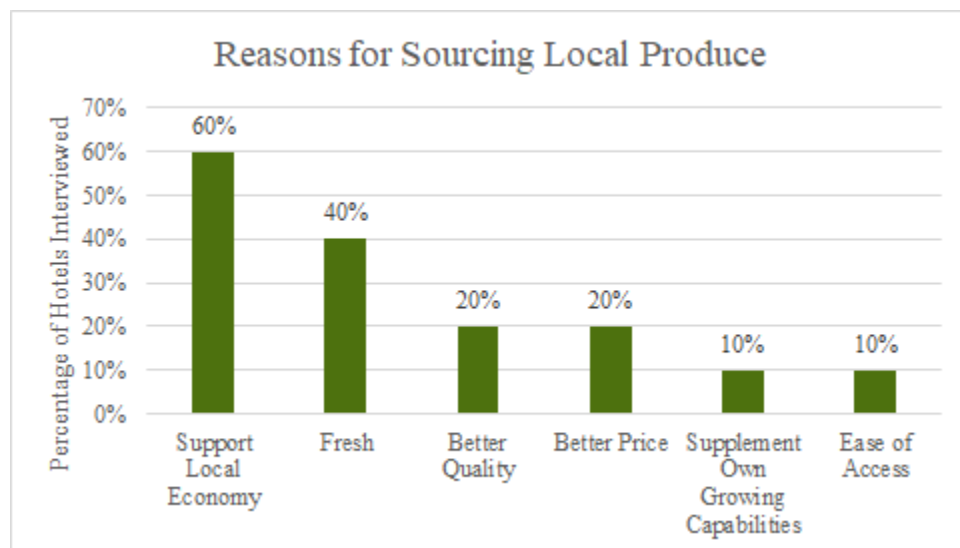


Figure 3: Reasons for Sourcing Local Produce

Six stated that their reason for purchasing local produce was to provide support for the community and its economy (Figure 3). The hotels that responded in this way specifically

expressed that it was important to them to “help” members of their community by keeping money local. One hotel stated that “supporting community development” was the main reason that they chose to purchase their food locally, and another said that they wanted to “help their neighbor.”

Twelve of the fourteen hotels interviewed expressed interest in replacing some of the produce that they currently import from outside the region with local produce, provided that the quality be of equivalent or higher standards (Appendix H). Five hotels reported that they prefer the freshness and quality of the products available locally (Figure 3). One hotel stated that purchasing locally allowed for “better control over the quality” of the products, since they could see the items at the time of purchase, instead of placing a large order that comes from elsewhere in the country.

The fruits that the hotels purchased either came from the weekly “farmer’s market” in Santa Elena, or the Vargas supermarket in Santa Elena. Both of these markets source a majority of their products from el Centro Nacional de Abastecimiento y Distribución de Alimentos (CENADA) in the Central Valley. The journey from San Jose and the Central Valley creates additional transportation costs, which get passed on to the consumer. Additionally, many of these non-local products are sold by middlemen rather than directly to the consumer, which increases the overall cost of the products. Two hotels stated that they believed local produce to be a better price than imported produce (Figure 3).

However, there are some concerns expressed by hotels in regard to local ability to meet their demand. The local farm in Monteverde that these hotels source their greens from mostly sells items such as leafy greens, herbs, and tomatoes. This farm has built many connections with businesses in Monteverde and is very successful because it has focused on a specific niche. Additionally, this farm can maintain a constant, year-round production through its use of greenhouses. Two of the hotels we spoke with suggested that farms in the area were unable to provide the same level of constant production to establish consistent business relationships. Both of these hotels were large-scale operations which served up to 9,300 patrons per month on average, so the staff were convinced that local farms individually could not provide a sufficient quantity of goods to meet the needs of their restaurants.

Additionally, even though the hotels would like to buy locally, they are unsure of how to go about contacting more local farmers. In an analysis of interview data from a previous research team consisting of 21 hotels and restaurants, 57% of businesses said that they do not know where to find vegetables locally, meanwhile 40% responded that they were unsure where to find local fruit (Figures 4 and 5) (Cardona et al, 2018).

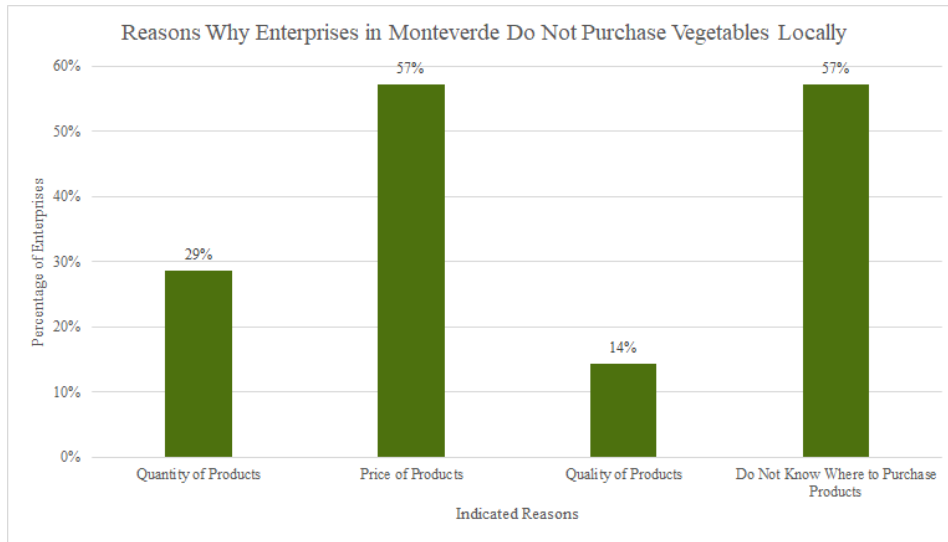


Figure 4: Reasons Why Enterprises in Monteverde Do Not Purchase Vegetables Locally

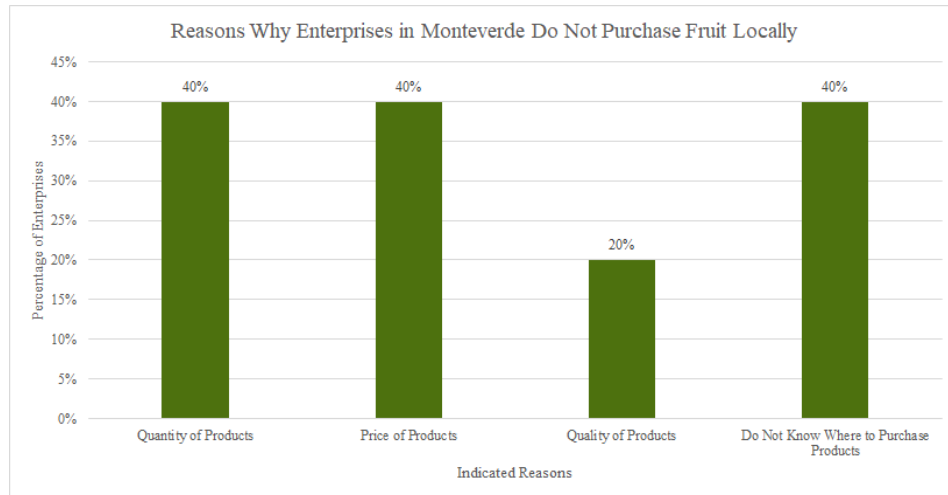


Figure 5: Reasons Why Enterprises in Monteverde Do Not Purchase Fruit Locally

These trends, although taken from only a sample of all the hotels and restaurants in Monteverde, are strong. The hotels which noted that price was a barrier to the purchase of local goods were separate from those which noted not knowing where to find the produce as their main reason, which explains why those categories are equal in size (Cardona et al, 2018). In our own interviews with hotels, one hotel stated that they are struggling to find local farms which they can source sustainable produce from. We can say with confidence that inadequate communication with local farmers is a theme among Monteverde enterprises. This is clearly not the only reason preventing the purchase of local goods, but we believe it to be one of the most important reasons. However, there is still the limitation of a small sample size.

Finding 5: There is a market for local organic produce within the local community.

We interviewed a market expert as well as local consumers, both families and hotels, and were able to determine that there is a market for local organic goods within the community. All

seven of the consumer families were interviewed while purchasing from an organic farmshare service. These consumers said that purchasing organic produce is a priority for them, however, this data is biased, due to the situation in which they were interviewed. Additionally, these families reported that purchasing local produce was either a priority, or at least a preference (Figure 6).

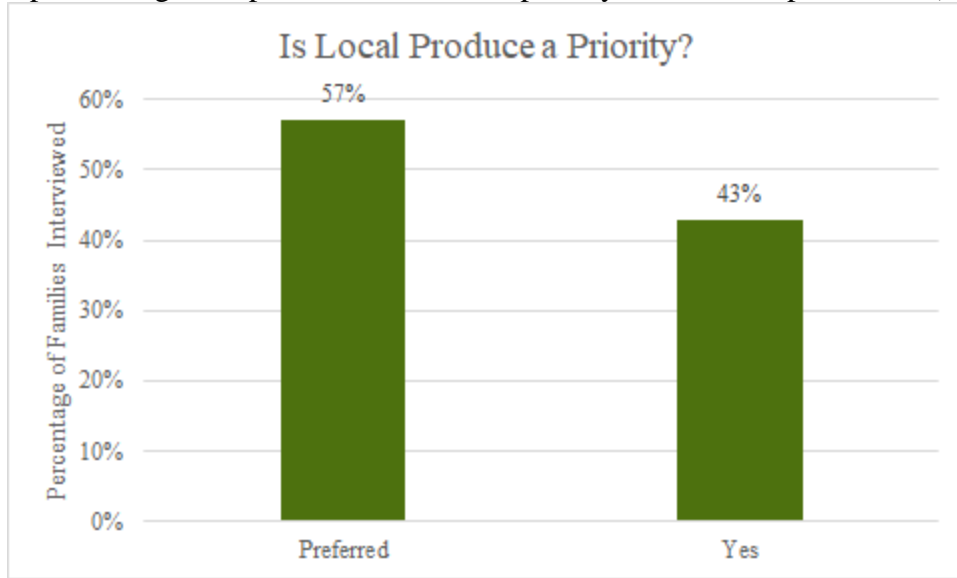


Figure 6: Is Local Produce a Priority?

Additionally, all of these families said that they would be likely to purchase from a farm share service that was both organic and locally sourced (Appendix J). The fact that these individuals stated a desire to purchase from a service providing local organic produce suggests the existence of a potential market because despite the bias, they are still consumers who would purchase local organic produce. Additionally, when asked if these consumers knew of more individuals interested in purchasing local organic produce four out of seven responded that they believed there were more potential consumers (Figure 7). While this is not solid evidence because it is hearsay, it does allude to a potentially larger market in the future.

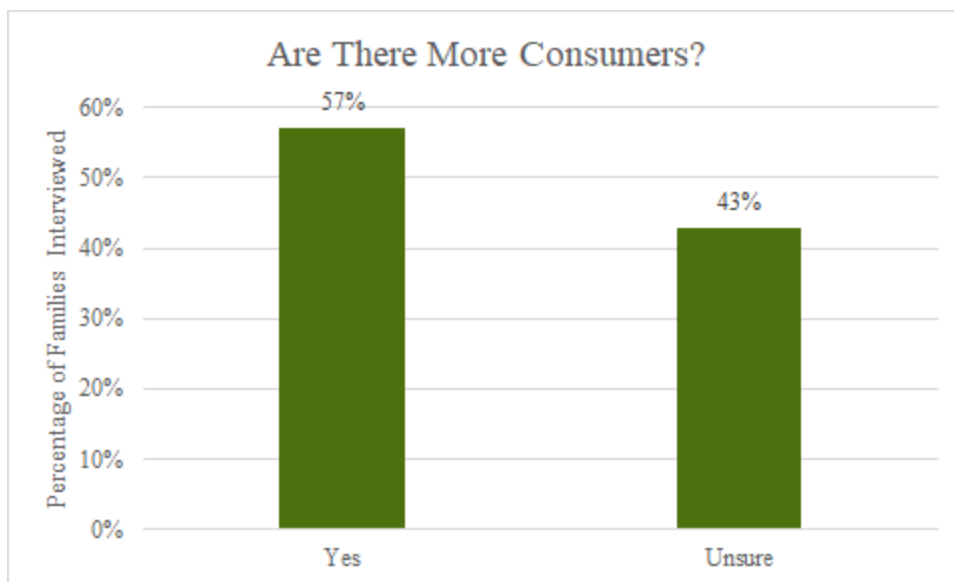


Figure 7: Are There More Consumers?

As part of our interview with consumer families we asked what they liked about the farm share that they currently participate, in order to gather the reasons that they purchase from it. We found that the reasons for supporting the farm share were diverse, but organic, local, freshness, and quality were all traits of the produce which were valued by consumers (Figure 8). While these individuals expressed an appreciation for the local nature of the produce from the farmshare, a majority of this produce is actually not local. Consumers were correct that some of the produce is sourced from local farms, but an interview with the manager of the farmshare operation revealed that much of the produce is brought to Monteverde by Zarcero, an agricultural organization based out of San Ramon.

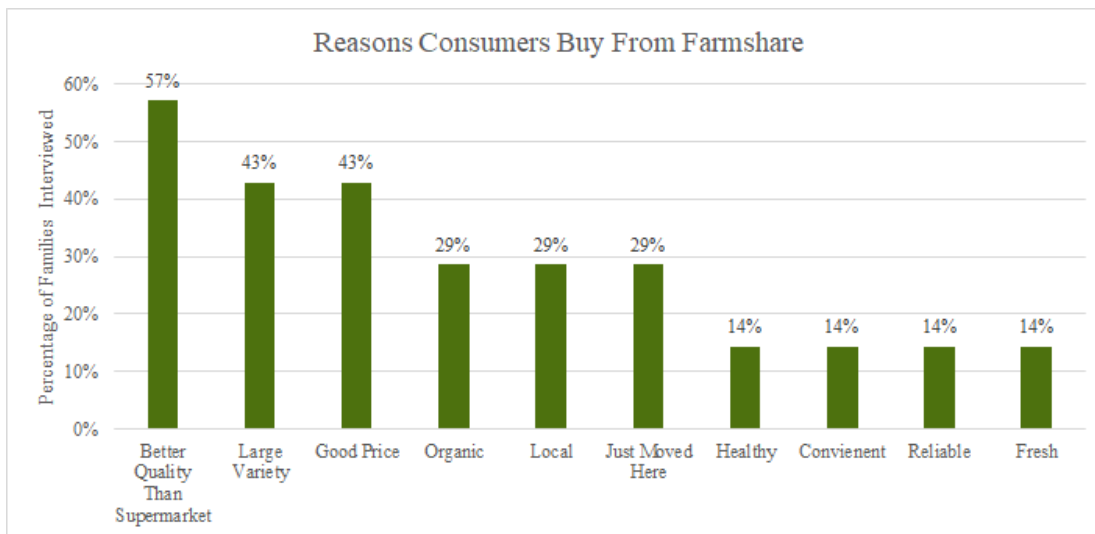


Figure 8: Reasons Consumers Buy From Farmshare

In addition to the information we received from consumers, our interview with the owner of the local Whole Foods store was insightful. When asked if he thought people in Monteverde wanted to buy more local organic produce he stated that “a lot of people in Monteverde want to buy local organic regardless of price”. He also explained that most of his organic produce is imported from another region of Costa Rica, however, he tries to buy local products when he can, and would buy more locally if local organic goods were more readily available. Additionally, we asked what else he could tell us about the local organic produce market and he shared with us that consumers at his shop want more processed agricultural goods, such as jams, juices, kombucha, and cheese. He felt that not only was this market underutilized, but it held the potential to generate greater profit. He provided the example that “a farmer who grows basil should take that basil and make pesto that they can charge eight times as much for.”

Based upon purchasing data from 14 hotels and an organic farmshare service we were able to compile a list of goods purchased by Monteverde consumers, and determine which goods were most popular (Figure 9). The four most commonly desired produce items were pineapple, watermelon, papaya, and banana (Figure 9).

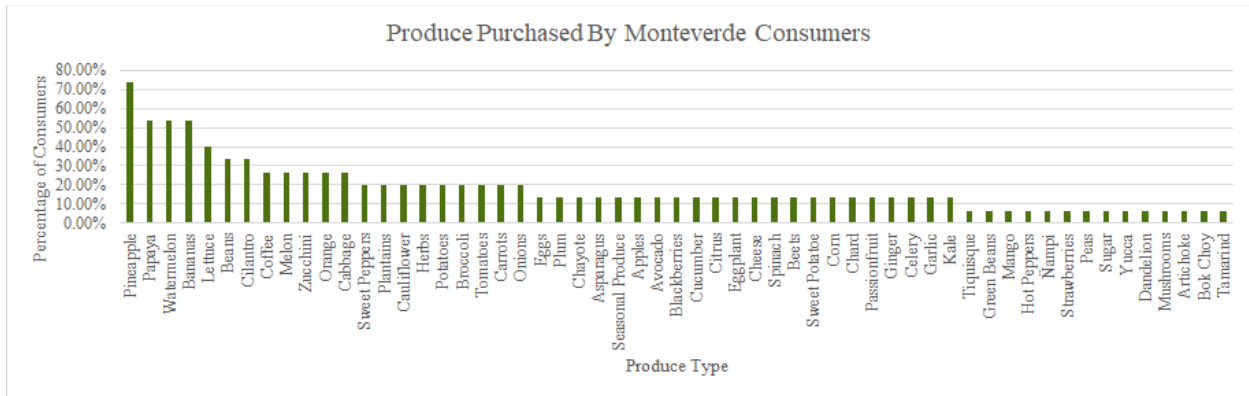


Figure 9: Produce Purchased By Monteverde Consumers

Additionally, we took this list of produce which is currently being purchased by Monteverde consumers and compared it to the list of produce currently being grown by Monteverde producers (Figure 10). We were able to find an overlap of 32 products between these two lists. The remainder of the crops which consumers desire may be able to be grown in Monteverde but are not currently being produced by the farmers we interviewed. In a conversation with our sponsor and representatives from MAG, we found that the majority of crops that consumers desire are possible to grow in the Monteverde region. Additionally, the consumers list includes “Seasonal Produce” which can be met by local farms that grow seasonal crops.

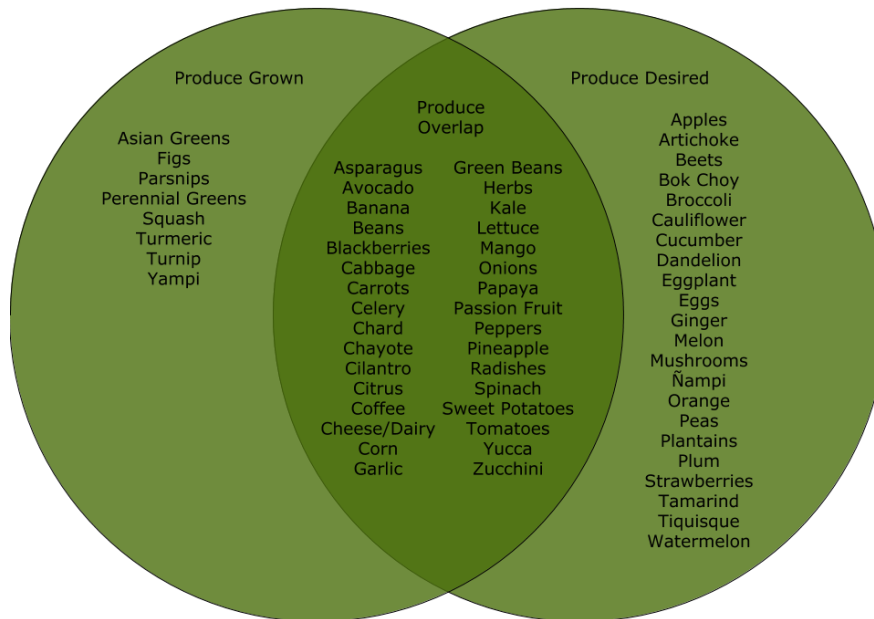


Figure 10: Commonalities in Produce Desired by Consumers and Produced by Farmers

We took price data of 20 popular items from one hotel, the farm share service, and the organic foods store to determine average prices of these products (Appendix O). It is important to note that the difference between the commercial purchase price from the hotel was only marginally less expensive than those being sold directly to consumers, with the largest difference in price being in garlic sold at the farm share, which was 6500 colones (\$10.68) per kilogram. However,

items such as kale, ginger, and arugula lettuce were sold at a lower cost through the farm share than to the hotel, which purchased these items in bulk.

Finding 6: Most association bylaws follow the same general format

In attempting to evaluate established organizations in Costa Rica we were limited by the quantity of data we could gather due to issues with communication and distance. Due to this limitation we expanded our research to include organizations in other countries including Germany, Ireland, Canada, and the United States. Through evaluation of the governing documents of these organizations we were able to determine structural similarities (Appendix K).

After analyzing data from interviews with association members as well as literature on the structure of 11 additional agricultural associations, we were able to determine commonalities in these structures. All but one of the organizations have a monetary element to their membership (Appendix K). The exact fees are not listed in the bylaws of the organizations, as there are variables such as number of members and the specific needs of the associations that determine the dues and allows for changes in the amount that is required to be paid. We were told by a member that Asociación para el Movimiento de Agricultura Orgánica del Pacífico Central (MAO-PAC) charges their members dues of 1000 colones every month. Comisión de Artesanos de Santa Elena y Monteverde (CASEM) charges 2000 colones upon joining the association as well as taking 35% of the sale price of any item sold in their store. This 35% is split into two destinations, 10% of the total sale price is put into a fund called the “capital social” for operating expenses, and purchasing of materials for sale to artisans, the rest goes to CASEM for infrastructure and employee costs (Lietinger, 1997).

An additional similarity between the groups is that all possess a requirement for members to attend general assembly meetings (Appendix K). Eleven out of thirteen organizations hold once yearly general assembly meetings (Appendix K). One of the associations holds meetings twice yearly, and the other holds meetings but we do not have information on how many per year (Appendix K). These once or twice-yearly meetings are the only regular, pre-established meetings of the general membership during the year, but for nine of the associations it is possible to call special meetings of the membership in certain situations (Appendix K).

Ten out of the thirteen organizations possess a governing body which is outlined in their bylaws (Appendix K). The other organizations possessed a system of branches as they were much larger organizations, and the individual branches had governing bodies or executives. The organizations which used a Board of Directors as their governing structure commonly outlined the makeup of the board, the election process, and the responsibilities of members of the board (Appendix K). The bylaws of these organizations also commonly outlined the criteria and categories of membership and a system for the termination of membership (Appendix K).

We additionally conducted an interview with a member of the defunct Monteverde Coffee Cooperative to determine reasons for its failure. From this interview we were able to learn that the coffee cooperative was part of a larger cooperative called CoopeSanta Elena. The coffee cooperative used the name Café Monteverde and the associated logo by paying the Milk Producers Association for rights to use the name and logo. This relationship lasted for almost 40 years. In 2010 the Milk Producers Association started being gradually sold off to foreign investors. Issues with ownership of the naming rights caused CoopeSanta Elena, as well as the coffee cooperative, to dissolve. However, the coffee cooperative reformed under the name Life Monteverde and is still functioning today although, it is much smaller now and only consists of 12 families. Life

Monteverde is an S.A. which means “Sociedad Anónima” which is similar to a Limited Liability Corporation (LLC) in the United States. Now Life Monteverde functions by selling 60% of its produced coffee to the United States and selling the remaining 40% within Costa Rica to locals and tourists.

Under Costa Rican law, there are programs in place to allow the creation of cooperatives for the benefit of workers and their communities. One such program is the Instituto Nacional de Fomento Cooperativo (INFOCOOP), which reviews applications for government recognition and can provide services such as promotion, education and training resources, and technical and financial assistance for established organizations.

Finding 7: There is sufficient desire for an Association of Sustainable Farmers in Monteverde

When farmers were asked if they would be interested in joining an association of farmers, 83% of those interviewed said they would be interested, and the remainder said they may be interested. After determining which farmers were interested in joining an association, we also asked if they have previous experience with one. Of those interested, half had prior experience with associations of some kind (Figure 11). These farmers had experience with the Monteverde Milk Producers Association, the Monteverde Coffee Cooperative, and a local artist’s cooperative.

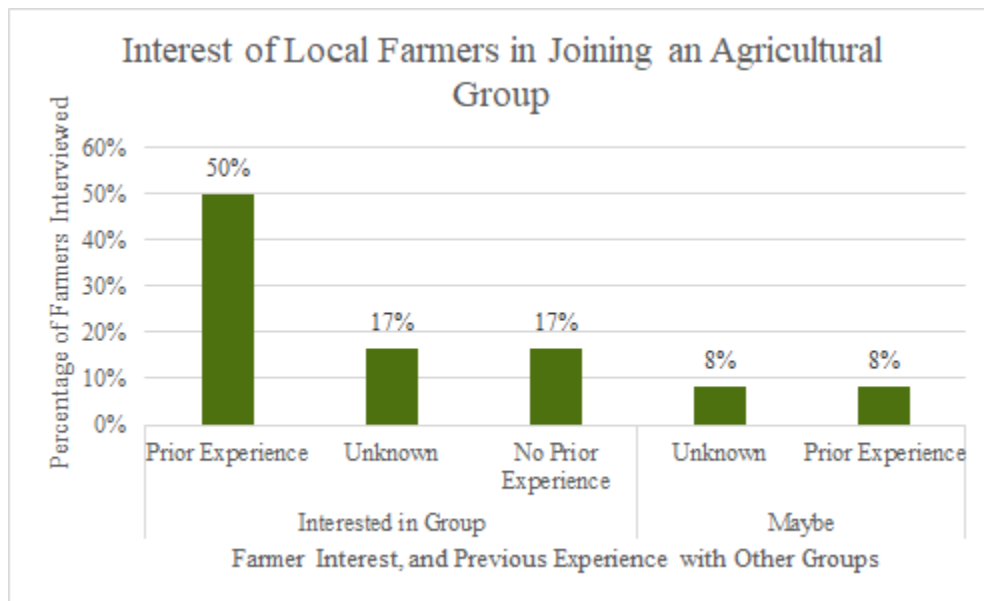


Figure 11: Interest of Local Farmers in Joining an Agricultural Group

Additionally, we asked what the interested farmers would like to receive out of membership in such an association. Commonly desired benefits were seed sharing, compost sharing, increasing the availability of agricultural tools, and organic trainings and certifications (Figure 12). This data helped us to develop recommendations for potential membership benefits of the association. We were also able to use this data to establish a group of farmers who are potential members of the association, which is incredibly important as an association cannot exist without members. This list of interested farmers and their contact information was given to our sponsor and the MAG (Appendix Q). After discussing this list of potential members, we were

informed that there was a group of 16 sustainable coffee farmers that had recently come to the Ministry of Agriculture office and would potentially be interested in membership.

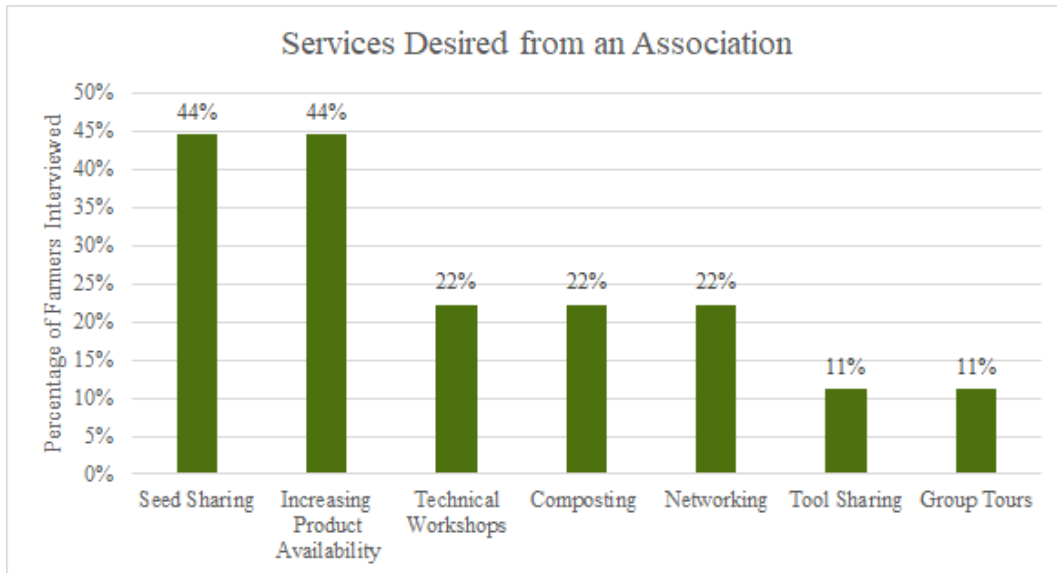


Figure 12: Services Desired from an Association

The requests for seeds sharing and compost sharing led us to seek out people in these industries in order to learn more about the services and establish contact with the individuals. We first contacted Eric Semeillon who runs an international organic seed business. He was extremely open to the idea of a partnership between his company and our association. Additionally, he offered to hold training for farmers at an area farm. We also contacted Justin Welch, who is in the process of growing his organic compost business. His compost is made from food waste generated by restaurants in the Monteverde region. He was extremely positive about the idea of our association and gave our team a lot of helpful suggestions. Justin also suggested that in the future he could work with farmers in the association on an individual level to tailor custom compost blends to best fit the specific crops.



Figure 13: Justin Welch's Compost Sifter

4.0 Discussion

These findings all overlap to provide the basis for the development of an Association of Sustainable Farmers in Monteverde. This association cannot exist without cooperation from both farmers and consumers. We found that farmers in Monteverde are interested in selling products to Monteverde enterprises. Many of these farmers currently grow mostly for their own consumption, but it has become clear that this is partially a result of a lack of a market. It would be wasteful for many of the farmers to attempt to produce at a larger scale if there was no way to find reliable customers. One farmer we interviewed stated that, “If someone can guarantee you that they will purchase your crop, whatever you are producing, then you produce. But you’re not going to be producing without someone to guarantee that.” During an interview with Justin Welch he informed us that proper risk management was very important to a successful business. Our hope with the association is that by working to guarantee a market we can convince farmers to take on a small amount of risk which is necessary to build their business and make profits.

Our findings show that there is a consumer base for these farmers to sell to. Hotels in the area would like to purchase more local organic produce, but do not know how to contact farmers. Communication between these parties is lacking, which leads hotels and restaurants to purchase products from more accessible sellers. These other sellers, often times, are suppliers which import goods from the Central Valley of Costa Rica, including products which are purchased at el Centro Nacional de Abastecimiento y Distribución de Alimentos (CENADA) in San Jose. As mentioned earlier this process of importing from other areas of Costa Rica leads to costs from middlemen and transportation, which is passed on to the consumer of these goods. Through our finding of the variety of crops that are able to be grown in the region, we found that some of the fruits that the hotels currently purchase could be produced locally, contrary to what several hotels had stated in the interviews. Locally produced goods do not need to be transported as far which means consumers are not paying to drive the produce halfway across the country.

Farmers interviewed expressed interest in improving communication with businesses to increase product availability. Although not impossible, it is difficult for an individual farmer to gain the visibility and production capability required to meet the needs of these businesses. This is one of the reasons that the formation of an association is necessary in Monteverde. The proposed association will promote the “farm to table” sale of produce. This gets rid of the middle man and lets consumers buy directly from the farmer which has many additional benefits past reducing the cost. The association would manage and facilitate the communication between hotel and farmer. For example, a hotel would tell the association that it needs five kilos of passion fruit every week for a month. The association would then contact one or several member farms which has passion fruit trees and the ability to produce the required amount. The farmer could then negotiate a fair price with the hotel as well as the logistics of delivery. During this process, the association would assist by providing historical price data and coordinating the logistics of delivery in the case that multiple farms were involved. Buying directly from the farmer allows a consumer to build a relationship which will benefit both the farmer and the consumer. This relationship is beneficial to the farmer because it provides a more predictable customer allowing the farmer to predict the quantity of goods necessary to produce more accurately. The hotel also benefits because they are supporting a local business, serving their guests sustainably produced produce along with mitigating risk when they are guaranteed, by the association, that they will be supplied the produce in the quantity they need.

When speaking with individuals who are involved with the services that were requested by the farmers—namely seeds and compost—we were met with enthusiasm to the idea of

collaboration. Not only do these products help the farmers, but in turn the producers of these materials will be able to expand their own market. Justin Welch, the compost producer, said that having a reliable customer base through a partnership with a farmers group would allow him to take on more risk and mitigate the potential for failure, allowing him better access to capital and thus giving him the ability to grow his business. This greater availability of compost would allow the farmers to expand and diversify their growing capabilities, thus stimulating a circular system between the farmer, the consumer, and the compost producer using the waste generated by the consumers to create a usable product.

5.0 Recommendations

Based on our project findings we have specific recommendations for the developed Association of Sustainable Farmers. At the conclusion of our time in Monteverde, we translated recommendations and included them as a part of our deliverables which were presented to the Ministry of Agriculture (MAG) in Monteverde.

Recommendation 1: The association should be developed in multiple phases.

Based on the summation of our research we determined that the Monteverde and San Luis region would indeed benefit from the creation of an Association of Sustainable Farmers. Originally our sponsor suggested that the organization focus solely on organic farming. Once we arrived in Monteverde we learned that the MAG had concerns about using the term “organic” as there are very few true organic farmers. We witnessed this first hand in our time here. Even though there was a substantial number of farmers that considered their practices to be organic, none were actually certified, and we found that there are only two certified organic farms in the area, one of which belongs to our sponsor. We also talked to three farmers that considered themselves to be sustainable. These farmers, combined with those who are organic but not certified, create a substantial base for an association. We therefore concluded that the use of the word ‘sustainable’ would be the most effective and inclusive choice.

In order to create this association, we decided to lay out a plan for the creation using phases that build on each other (Appendix L, Figure 14). The phases were built using the research and knowledge gained during our time in Monteverde, along with input from our project sponsor. The time frame is built on what our team feels is feasible, but this timeline is not final and may be adjusted as the association is further developed by its members. Through conversations with farmers, we discovered that farmers had negative connotations toward the terms “association”, and “cooperative”. Therefore, we recommend that this association be named Productores Sostenibles de Monteverde, avoiding the use of any terms with negative connotations.

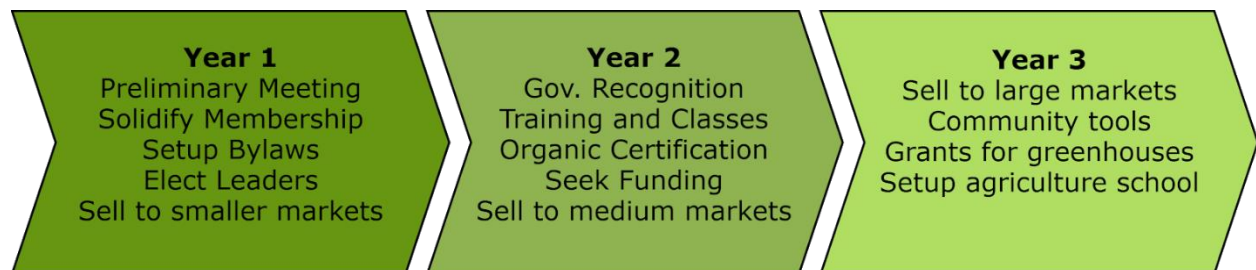


Figure 14: Timeline for Association Development

Recommendation 2: Initially, the association should target a small consumer base.

Based on our data of produce which is currently being produced by local farmers, we have determined that the quantity of products currently being developed is not great enough to supply multiple large hotels. This is due to the fact that many farmers do not sell the majority of their crops, only growing them for subsistence. To begin making profit from the sale of produce, we recommend that the association pursue either one or two small hotels or a group of local families as the initial customer base. We have included a list of hotels who would be interested in increasing their local purchasing as a deliverable for the association's reference (Appendix N). Additionally, we have included a general idea of how each of 20 products should be priced based upon a comparative analysis of price data from one hotel, the local farm share service, and a local organic foods store (Appendix O).

Once the association becomes established and is able to increase production, they may be able to pursue a larger consumer base. The farmers can start by selling whichever crop that they currently produce commercially, such as coffee, and later, the farmers can use these footholds with businesses to start selling the diverse variety of crops they are able to produce, in addition to coffee. As farmers are able to sell produce to the small base of consumers, they can receive profits which will allow them to invest in their farms so that they may produce higher yields of diverse crops. Once the farms can produce higher quantities they can reach out to a higher number of larger consumers, continuing the cycle.

Recommendation 3: Association members should work to diversify crops produced.

Before arriving in Costa Rica, we believed that there were many crops being imported into the area that could not be grown in Monteverde. However, we have since learned that most crops can be grown in the area due to the many microclimates caused by differences in elevation. This made us change our approach to recommendations from an early belief that hotels should switch to purchasing types of produce which can be grown locally. With the knowledge of how many goods can be produced in the region, we decided that it would be more beneficial for the farmers to diversify the production of crops. Currently over half of the interviewed farmers are selling coffee, with four of those farmers only selling coffee. While coffee is relatively easy to grow and profitable for sale in this region, the association cannot meet the needs of local consumers if the member farmers are producing large amounts of coffee and very small amounts of other produce. As shown in our findings, there is a large overlap of 32 products between what consumers desire, and what farmers currently produce. We have included in our deliverables a full list of what products the consumers desire, and the available price data from consumers (Appendix O). We recommend that farmers attempt to grow these crops in higher quantities for sale to consumers. Additionally, we recommend that farmer's diversify production into the creation of non-crop agricultural goods such as jams, juices, pesto, etc. based on market expert testimonial that these products are in demand by consumers.

Recommendation 4: The association should work to bring in classes on organic and sustainable farming practices.

We recommend that the association reach out to established training organizations such as Instituto Nacional de Aprendizaje (INA), an independent service which provides trainings for professionals in many different sectors including organic agriculture, or the University of Georgia to bring in classes on organic farming practices for the members. Additionally, we have contacted

MAG who said they would assist in providing trainings as long as there is a group of interested farmers. All but one of those interviewed said that they would be interested in trainings. These trainings would focus mainly on troubleshooting of common issues that can arise on a farm and how to solve them without reverting to the use of agrochemicals and non-natural fertilizers. The biggest concerns for farmers in this area are wind damage, water availability, and leaf cutter ants. Fungi is also potentially a significant issue.

Farmers stated that they would be very interested in technical workshops and training on how to increase the availability of their products to consumers. Ideally, these trainings would be free of charge for the individual member farmers and would take place on a farm where the techniques could be practically demonstrated. In addition to these technical trainings, we believe it would be valuable for the farmers to be trained in how to grow seedlings in an organic manner so that they can confidently start with organic seeds rather than conventional seedlings. Ideally, the association would be able to hold these trainings themselves in addition to bringing in outside resources so that the member farmers can share knowledge specific to the region with each other.

Recommendation 5: The association should seek funding from both governmental and private sources as a means to provide additional resources to members.

Based on our research it is desirable for this association to invest in the future of farming in the region through the purchase of shared farm equipment, or a model farm, where trainings can take place. Communal farm equipment would assist these farmers in increasing their crop yields and potentially easing the burden of the younger generation's disinterest in assisting their parents on the farm. Communal tools would be kept at a central location with the ability to be signed out by member farmers for temporary use. It is up to the association if they would like to have a member store it, or they could contact the MAG to see if the ministry has a location where the association could store it. Additionally, we recommend that before large communal tools are purchased, a means of transporting said tools be purchased by the association, for example a trailer.

The purchase of a model farm would be beneficial as a place to hold trainings on organic and sustainable farming techniques both by outside agencies and by member farmers. Additionally, a model farm would serve as a place to potentially encourage the younger generation to learn more about farming and the fact that it can be a reliable career choice for them. Ideally, this model farm would be located on land owned by the association and could serve as a location to store any communal tools which the association owns. In order to have the funds that this will require, we recommend that the association take steps to obtain funding from the government, as well as pursuing grants or investments from private sources. We recommend SailCargo and Monteverde Community Fund as potential private sources for funding.

Recommendation 6: The association should develop a relationship with organic seed and compost resources.

Our research found that farmers desired seed and compost sharing as benefits of membership. Based on this, we recommend that the association develop a relationship with individuals like Eric Semeillon and Justin Welch who have access to commercial quantities of organic compost and seeds. This way in the future they can provide easy access to these services for member farmers. We have made initial contact with these individuals in the area who can be of assistance in this and are providing their contact information to the association (Appendix R). Ideally, the association will begin to assist farmers in purchasing seeds and compost from these

individuals by providing members with the contact information of Justin and Eric. In the future, when the association is developed and possesses an income through dues and grants, the association will be able to purchase seeds and compost from these suppliers and distribute to the member farmers. This would mean that member farmers would be provided the compost and seed resources for no extra fee other than dues, because the resources were purchased by the overarching entity Productores Sostenibles de Monteverde.

Conclusion

An association of sustainable farmers is a necessary asset in the Monteverde region. This association will combat many of the obstacles which prevent farmers from becoming more successful. When local farmers are supported and enabled to succeed, the community as a whole reaps the benefits. The alternative would be to continuously rely on imported produce, a decision which is not economically, environmentally, or socially beneficial to the community. The opportunity for farmers to collectivize will be the first step to make a positive change in the community for farm families, consumers, and the environment. With a successful organization, there is the potential to inspire future generations to preserve the agricultural roots of Monteverde and help to save this endangered culture.

Works Cited

- Altieri, M. (2002) Chapter 4: Non-Certified Organic Agriculture in Developing Countries. Retrieved from <http://www.fao.org/docrep/005/y4137e/y4137e04.htm>
- Amadeo, K. (2018, September 19). Why Souvenirs Are Imports. Retrieved from <https://www.thebalance.com/imports-definition-examples-effect-on-economy-3305851>
- Beebe, J. (2014). *Rapid qualitative inquiry: A field guide to team-based assessment* (2nd ed.). Lanham: Rowman & Littlefield.
- Biello, D. (2012, April 25). Will Organic Food Fail to Feed the World? Scientific American. Retrieved from <https://www.scientificamerican.com/article/organic-farming-yields-and-feeding-the-world-under-climate-change/>
- Brodth, S., Six, J., Feenstra, G., Ingels, C. & Campbell, D. (2011) Sustainable Agriculture. *Nature Education Knowledge* 3(10):1
- Burlingame, L. J. (2014). Conservation in the Monteverde zone: contributions of conservation organizations. In N. M. Nadkarni & N. T. Wheelwright (Eds.), *Monteverde: Ecology and Conservation of a Tropical Cloud Forest - 2014 Updated Chapters*. Bowdoin Scholars' Bookshelf.
- Cardona, S., Ciliberto, F., Gray, O., & Puera, N. (2018, March 3). *Localization of Monteverde's Economy* [Scholarly project]. Retrieved November 5, 2018.
- Colborn, T. (1991). Epidemiology of great lakes bald eagles. *Journal of Toxicology and Environmental Health*, 33(4), 395-453. doi:10.1080/15287399109531537
- Cuesa. (n.d.). 10 Reasons to Support Farmers Markets. Retrieved from <https://cuesa.org/learn/10-reasons-support-farmers-markets>
- Damiani, Octavio. (2002). *Organic agriculture in Costa Rica: The Case of the Talamanca Small Farmers Association*. 10.13140/RG.2.1.3899.1601.
- Dunahay, S. (2014, August 07). The Impact of Tourism in Costa Rica. Retrieved from <https://www.costaricantimes.com/the-impact-of-tourism-in-costa-rica/30363>
- Environmental Literacy Council (2015). *Life Cycle Analysis*. Retrieved from <https://enviroliteracy.org/environment-society/life-cycle-analysis/>
- Evans, S. (2010). Conclusion: Picking Up the Gauntlet. In *The Green Republic: A Conservation History of Costa Rica* (pp. 245-255). University of Texas Press. Retrieved November 12, 2018.
- Flinn, J. (1998). Freelists, ratings, averages, and frequencies: Why so few students study Anthropology. In *Using Methods in the Field: A Practical Introduction and Casebook*

- (pp.85-95). Altamira Press.
- GRACE Communications Foundation. (2018). Welcome to Sustainable Table. Retrieved from <http://www.sustainabletable.org/>
- Grubinger, V. (2010, April). Ten Reasons to Buy Local Food. Retrieved from <https://www.uvm.edu/vtvegandberry/factsheets/buylocal.html>, University of Vermont
- Hill, G. W. (1964). The Agrarian Reform in Costa Rica. *Land Economics*, 40 (1), 41-48.
doi:10.2307/3144459
- Honeycutt, E. (2017, December 22). Why Buy Local Food? It's Healthier for You and Better for the Environment. Retrieved from <https://foodrevolution.org/blog/why-buy-local-food/>
- Irfan, U. (2018, July 17). Costa Rica has an ambitious new climate policy - but no, it's not banning fossil fuels. Retrieved from <https://www.vox.com/energy-and-environment/2018/7/17/17568190/costa-rica-renewable-energy-fossil-fuels-transportation>
- Klavinski, R. (2018, September 20). 7 benefits of eating local foods. Retrieved from https://www.canr.msu.edu/news/7_benefits_of_eating_local_foods, Michigan State University
- Lienhard, J. H. (1987). Three-Field Crop Rotation [Audio blog post transcription]. *Engines of our ingenuity*. Retrieved November 15, 2018, from <https://www.uh.edu/engines/epi26.htm>
- Lietinger, I. A. (1997). Long-Term Survival of a Costa Rican Women's Crafts Cooperative: Approaches to Problems of Rapid Growth at CASEM in the Santa Elena-Monteverde Region. In *The Costa Rican Womens Movement* (pp. 210-233). University of Pittsburgh Press.
- Longnecker, M. P., Rogan, W. J., & Lucier, G. (1997). The Human Health Effects of Ddt (Dichlorodiphenyltrichloroethane) And Pcb's (Polychlorinated Biphenyls) And An Overview of Organochlorines in Public Health. *Annual Review of Public Health*, 18(1), 211-244. doi: 10.1146/annurev.publhealth.18.1.211
- Lyon, S. (2010). "Trade Not Aid": Assessing Fair Trade's Economic Impact on Cooperative Members and Their Families. In *Coffee and Community: Maya Farmers and Fair-Trade Markets* (pp. 55-79). University Press of Colorado.
- Mannon, S. E. (2017). *City of Flowers: An Ethnography of Social and Economic Change in Costa Rica's Central Valley*. New York, NY: Oxford University Press.
- Mogrovejo, R., Vanhuynegem, P., & Mora, A. (2012). El cooperativismo en América Latina: Una diversidad de contribuciones al desarrollo sostenible. La Paz: OIT.

- Monsanto. (n.d.). Organic Farming vs. Conventional Farming. Retrieved from <https://monsanto.com/innovations/modern-agriculture/organic-farming-vs-conventional-farming/>
- Netboy, A., & Edward, E. E. (1945). *Shall I Take Up Farming?* [Pamphlet]. American Historical Association.
- Pertsova, C.C. (2007). *Ecological Economics Research Trends*. Retrieved from <https://books.google.com/>
- Professional Women’s Network of Costa Rica (PWN) By Laws. (2016). Retrieved from <https://pwnocr.com/by-laws/>
- Reganold, J. P., Palmer, A. S., Lockhart, J. C., & Macgregor, A. N. (1993). Soil Quality and Financial Performance of Biodynamic and Conventional Farms in New Zealand. *Science*, 260(5106), 344-349. doi:10.1126/science.260.5106.344
- Rodrigue, J. (2017). Chapter 8 - Transport, Energy, and Environment. In *The Geography of Transport Systems* (4th ed.). NY: Routledge.
- Rosenfeld, L. D., & Harrison, M. (2012). A Biodynamic Farmer Combines Nature and Cosmic Forces an Unusual Experience at “The Farm,” Southold. In *Exploring Nature's Bounty: One Hundred Outings Near New York City* (pp. 59-60). Rutgers University Press, Rivergate Books.
- Ryan, G., & Weisner, T. (1998). Content Analysis of Words in Brief Descriptions: How Fathers and Mothers Describe Their Children. In *Using Methods in the Field: A Practical Introduction and Casebook* (pp. 57-68). Altamira Press.
- Sirgy, Joseph M, et al. “The Impact of Imports and Exports on a Country’s Quality of Life.” *Social Indicators Research*, vol. 83, no. 2, 20 Sept. 2006.
- Sirota, N. (2019, February 20). [Personal interview].
- Smith, R. (2012, February 17). Fifty years brings significant changes to agriculture. Retrieved from <https://www.southwestfarmpress.com/grains/fifty-years-brings-significant-changes-agriculture>
- Staatz, J. M. (1987). Farmers' incentives to take collective action via cooperatives: A transaction cost approach. *Cooperative Theory New Approaches*, U.S.D.A. Retrieved November 11, 2018.
- Stuckey, J. D., Camacho, F., Vargas, G., Stuckey, S. A., & Vargas, J. (2014). Agriculture in Monteverde, Moving Toward Sustainability. In N. M. Nadkarni & N. T. Wheelwright (Eds.), *Monteverde: Ecology and Conservation of a Tropical Cloud Forest - 2014 Updated Chapters*. Bowdoin Scholars' Bookshelf.

- Trautmann, N. M., Porter, K. S., & Wagenet, R. J. (2012). Modern Agriculture: Its Effects on the Environment. *Natural Resources Cornell Cooperative Extension*.
- Utting, P., & Nannyonjo, J. (2015). Enabling Agricultural Cooperatives in Uganda: The Role of Public Policy and the State. In *Social and Solidarity Economy: Beyond the Fringe* (pp. 266-283). Zed Books.
- Valentinov, V. (2007). Why are cooperatives important in agriculture? An organizational economics perspective. *Journal of Institutional Economics*, 3 (01), 55.
doi:10.1017/s1744137406000555

Appendix A

Hotel Interview Questions in English

These questions were developed for the purpose of interviewing Monteverde enterprises. The information from these interviews will assist in the achievement of Objective 1.

Hotel Interview

Name of Hotel:

Date (dd/mm/yy) and Location:

Duration (start time-end time):

Interviewers:

Preamble: The data collected from these questions will be published virtually in an Academic Paper. The final published data will remain anonymous, though some identifying information may remain in certain uses of the data. Direct quotes may be published. You are free to skip any questions or stop the interview at any time. By answering these questions, you consent to these terms.

Purpose of interview: To gather quantitative and qualitative information about consumer use of local / organic produce, which will be used to aid in the development of a plan for a successful Association of Farmers. It is the intention that this association will unite Monteverde farmers to support local agriculture and healthy communities.

Nature of Study: This study is being conducted by university students from Worcester Polytechnic Institute, Worcester MA, USA, in conjunction with a local sponsor, Noam Sirota.

Consumer Interview Questions:

1. Can you tell us a little about the hotel restaurant?
2. Around how many people eat here each month?
 - a. Are the restaurant customers mostly hotel guests, other tourists, or locals?
3. What types of produce do you use?
 - a. Are you using local produce?
 - i. If yes, why did you choose to source locally?
 1. Which farms do you source from?
 - ii. If no, what factors would you say affect your ability to source locally?
 1. Would you consider switching to locally sourced produce?
 2. What would incentivize sourcing local organic produce for you?
4. Do you use organic produce?
 - a. If yes, can you tell us about your experience in attempting to source local organic produce in this region?
 - b. If no, would you consider switching to organic produce if it was more locally accessible?
5. Would you be willing to give us copies of your receipts or price information for the last 3-6 months? (This information will be used to assist in determining fair prices for local organic produce in the region)

Appendix B

Hotel Interview Questions in Spanish

These questions were developed for the purpose of interviewing Monteverde enterprises. The information from these interviews will assist in the achievement of Objective 1.

Entrevista de Hotel

Nombre de Hotel:

Fecha (dd/mm/yy) and Lugar:

Duración (hora de comienzo - hora de termino):

Los entrevistadores:

Preámbulo: Los estudiantes publicaremos la información juntó en esta entrevista en el red por un documento académico. Los datos que nosotros obtengamos serán anónimos, aunque alguna información serán identificar a veces. Cotizaciones directas pueden publicar. Usted puede omitir alguna pregunta que usted quiera. Si respondería a estas preguntas, usted acepta estos términos.

Propósito: Para obtener datos sobre el uso de los frutas y verduras que son orgánico y local para desarrollar un plan para un asociación de agricultores. La intención de eso esta asociación es unir los agricultores de Monteverde para apoyar fincas local y comunidades saludables.

Naturaleza del estudio: Este estudio está conducir por estudiantes de Worcester Polytechnic

Institute en Worcester Massachusetts con el apoyo de Noam Sirota.

Preguntas de Entrevista:

1. ¿Puede usted dice sobre su hotel y restaurante si tendría?
2. ¿Cuántos personas visiten y comer a su hotel cada mes?
 - a. ¿Son la mayorías de los clientes de su restaurante huéspedes, turistas, o locales?
3. ¿Qué tipos de frutas y verduras usa en su hotel?
 - a. ¿Usa frutas o verduras local?
 - i. ¿Si usaría local, porque usa local?
 1. ¿Qué granjas son los frutas y verduras cultivos en?
 - ii. ¿Si, no usa local frutas y verduras porque?
 1. ¿Puede usted considerar el uso de local frutas y verduras en el futuro?
 2. ¿Qué incentive usted para comprar más frutas y verduras de Monteverde?
4. ¿Usa frutas y verduras que ser orgánico?
 - a. ¿Si usted usaría orgánico, por favor comente en sus experiencias?
 - b. ¿Si usted no usaría orgánico, consideraría cambiar a productos orgánicos si estuviera más disponible?
5. ¿Puede usted da nosotros copias de su recetas o información de precios de frutas o verduras de la últimas 3-6 meses? (Esta información sería usar para determinar los precios justo a frutas y verduras local).

Appendix C

Farmer Interview Questions in English

These questions were developed for the purpose of interviewing Monteverde farmers. The information from these interviews will assist in the achievement of Objectives 2, and 4.

Farmer Interview

Farmer Name:

Date (dd/mm/yy) and Location:

Duration (start time-end time):

Interviewers:

Preamble: The data collected from these questions will be published virtually in an Academic Paper. The final published data will remain anonymous, though some identifying information may remain in certain uses of the data. Direct quotes may be published. You are free to skip any questions or stop the interview at any time. By answering these questions, you consent to these terms.

Purpose of interview: To gather quantitative and qualitative information, which will be used to aid in the development of a plan for a successful Association of Farmers. It is the intention that this association will unite Monteverde farmers to support local agriculture and healthy communities.

Nature of Study: This study is being conducted by university students from Worcester Polytechnic Institute, Worcester MA, USA, in conjunction with a local sponsor, Noam Sirota.

Producer Interview Questions:

1. How long have you been a farmer?
2. What do you grow on your farm? How much do you sell it for? Is it organic?
3. Is there a specific reason you choose to grow these crops?
4. Why did you choose to go organic?
 - a. If no organic produce, what factors prevent you from going organic?
5. Do you have a network of other farmers that you work with or consult?
 - a. If no, are you interested in developing these relationships with other farmers?
 - b. If yes, where did you meet these other farmers? To what extent do you interact with them?
6. Do you have any experience with farming associations?
 - a. If so, what association and how has it helped you?
 - b. Are you aware of efforts to develop an Association of Farmers (AoF) in Monteverde?
7. AOF:

“Unite the area farmers to support one another. Help communicate with local businesses like hotels or stores. Provide ways to learn about farming. Encourage organic practices and possibly provide organic certification.”

Based off this description, do you think you would be interested in joining an Association of Farmers?

8. What services would you like to see offered by an Association of Organic Farmers specifically?
 - a. Are you interested in organic certification?
 - b. Would you be interested in future trainings about organic growing practices?
9. Where do you sell most of your products? (farmers markets, families, business, etc)
 - a. What crops are most commonly sold? Which crops sell the least?

Appendix D

Farmer Interview Questions in Spanish

These questions were developed for the purpose of interviewing Monteverde farmers. The information from these interviews will assist in the achievement of Objectives 2, and 4.

Entrevista de Fincas

Nombre de Hotel:

Fecha (dd/mm/yy) and Lugar:

Duración (hora de comienzo - hora de termino):

Los entrevistadores:

Preámbulo: Los estudiantes publicaremos la información juntó en esta entrevista en internet por un documento académico. Los datos que nosotros obtengamos serán anónimos, aunque alguna información serán identificar a veces. Cotizaciones directas pueden publicar. Usted puede omitir alguna pregunta que usted quiera. Si respondería a estas preguntas, usted acepta estos términos.

Propósito: Para obtener datos sobre el uso de los frutas y verduras que son orgánico y local para desarrollar un plan para un asociación de agricultores. La intención de eso esta asociación es unir los agricultores de Monteverde para apoyar fincas local y comunidades saludables.

Naturaleza del estudio: Este estudio está conducir por estudiantes de Worcester Polytechnic Institute en Worcester Massachusetts con el apoyo de Noam Sirota

Producer Interview Questions:

1. ¿Cuántos años usted trabaja como un agricultor?
 - a. ¿De donde aprende cómo cultivar?
2. ¿Que cultiva en su finca?
 - a. ¿Que precio lo venden para?
 - b. ¿Podría cultivar más si hay demanda en el futuro?
3. ¿Porque cultiva estos productos?
4. ¿Es usted orgánico y porque?
 - a. ¿Si no, porque no es orgánico?
5. ¿Tiene usted una red con otras agricultores para preguntar si necesita ayuda?
 - a. ¿Si no, interesa en formar un grupo con otras agricultores?
 - b. Si sí ¿Tiene reuniones con el grupo? ¿Hablame de ellos?
6. ¿Tiene usted experiencia con asociaciones, corporativos, o otras grupos de la agricultura en el pasado?
 - a. Si si ¿Que asociación, como se ha ayudado?
 - b. ¿Conoce usted de un esfuerzo para desarrollar una asociación en el área?
7. Ahora voy a describir una asociación de agricultores:

“Una asociación unaria las fincas en la área para apoyarse unos a otros. Ayuda con la comunicación con los hoteles y las tiendas. Proporciona maneras de aprender más sobre la agricultura. Anima técnicas de cultivo orgánica y proporcionar certificación orgánica.”

- ¿Basado en esta descripción se uniría a tal asociación?
8. ¿Qué tipos de servicios que quisiera en un grupo?
 - a. ¿Interesa en una certificación orgánica?
 - b. ¿Interesa en futuros clases sobre las prácticas de cultivo orgánico?
 9. ¿Donde vende sus productos?
 - a. ¿Lo que los cultivos se venden los mejores? ¿Los peores?

Appendix E

Consumer Family Interview Questions in English

These questions were developed for the purpose of interviewing Monteverde produce consumers.

The information from these interviews will assist in the achievement of Objective 1.

Consumer Family Interview

Family Name:

Date (dd/mm/yy) and Location:

Duration (start time-end time):

Interviewers:

Introduction: We are a group of student researchers working with a local farmer to try and establish a network of local organic farmers. We would like to ask you some questions to get more information on local interest in locally grown organic produce.

Preamble: The data collected from these questions will be published virtually in an Academic Paper. The final published data will remain anonymous, though some identifying information may remain in certain uses of the data. Direct quotes may be published. You are free to skip any questions or stop the interview at any time. By answering these questions, you consent to these terms.

Purpose of interview: To gather quantitative and qualitative information on the purchasing habits of consumers of local / organic produce, which will be used to aid in the development of a plan for a successful Association of Farmers. It is the intention that this association will unite Monteverde farmers to support local agriculture and healthy communities.

Nature of Study: This study is being conducted by university students from Worcester Polytechnic Institute, Worcester MA, USA, in conjunction with a local sponsor, Noam Sirota.

Consumer Interview Questions:

1. What about this farm share service do you like?
2. Is it a priority for you to purchase organic produce?
3. Do you have any friends who would be interested in purchasing organic produce? (we are trying to determine if there is a large base of people in this region who would like to purchase organic produce)
4. Where is this produce grown (not locally)?
5. Is it a priority for you that your produce is sourced from local farms?
6. Would you be more likely to buy from a service like this knowing the produce is both organic and from the local region?

Appendix F

Consumer Family Interview Questions in Spanish

These questions were developed for the purpose of interviewing Monteverde produce consumers.

The information from these interviews will assist in the achievement of Objective 1.

Entrevista de Familias

Nombre de Familia:

Fecha (dd/mm/yy) y Lugar:

Duración (hora de comienzo - hora de término):

Los entrevistadores:

Preámbulo: Los estudiantes publicaremos la información juntó en esta entrevista en el red por un documento académico. Los datos que nosotros obtengamos serán anónimos, aunque alguna información serán identificar a veces. Cotizaciones directas pueden publicar. Usted puede omitir alguna pregunta que usted quiera. Si respondería a estas preguntas, usted acepta estos términos.

Propósito: Para obtener datos sobre el uso de los frutas y verduras que son orgánico y local para desarrollar un plan para una asociación de agricultores. La intención de eso esta asociación es unir los agricultores de Monteverde para apoyar fincas locales y comunidades saludables.

Naturaleza del estudio: Este estudio está conducir por estudiantes de Worcester Polytechnic Institute en Worcester Massachusetts con el apoyo de Noam Sirota.

Preguntas de Entrevista:

1. ¿Que se gusta sobre este servicio de frutas y verduras?
2. ¿Es una prioridad que compra productos orgánicos?
3. ¿Tiene usted amigos que interesen en la compra de frutas y verduras orgánicos? (we are trying to determine if there is a large base of people in this region who would like to purchase organic produce)
4. ¿De donde son los productos que usted compra? (not locally)
5. ¿Es una prioridad que estos productos son de fincas local (Monteverde y San Luis)?
6. ¿Sería más probable que comprar productos de un servicio si los productos son orgánicos y local?

Appendix G

Whole Foods Interview Questions

1. What types of produce do you sell?
2. Is all of the produce you sell organic?
3. How much of your produce do you buy from local farms?
4. Would you buy more of your produce locally if it was more accessible?
5. Do you believe that there is a market for local organic produce in Monteverde?
6. Is there anything else you can tell us about the local organic produce market?

Appendix H

Results of Hotel Interviews

Name of Hotel	# of Restaurant Guests	Types of Produce Used	Local (which types)	Name of Local Farm/Store	Reason for sourcing locally	Organic	Reason Organic	Price info	Additional notes
Atardecer	200	Sandia, papaya, piña, melon, naranja	Lettuce, herbs, tomatoes, cabbage	most likely orlando		No, would like to			
Orquídeas		Papaya, pineapple, melon, bananas romaine lettuce, cilantro, melon, papaya, pineapple, chayote, potatoes,	None	Finca de Cabecera (do not want to source locally)	N/A	Yes	Hard to source organic, difficult for producers and more expensive		
Poco a Poco	600	broccoli, cauliflower, zucchini	greens	Supermarkets, Orlando, La Feria	As fresh as possible	50-50			Orlando keeps a constant price regardless of season and has a consistent supply of what they use
Ficus	2850	piñas, sandía, papaya orange, piña, watermelon, banana,	Greens	Orlando, La Feria, Feria del agricultores cerada (heredia)	As fresh as possible	"Organic Hydroponic"	Piña has so many chemicals		
Santa Fe	50	seasonal produce	some local vegetables	Supermarket	"local fruits are not good"	Only piña			"Not more than \$5" for small quantities of most produce
Senda	825	cilantro, greens, mint, carrots, onions, tomatoes, cheese, eggs, coffee, sugar, beans,	carrots, onions, tomatoes, mint, cilantro, greens	Supermarkets, Vargas, Orlando	value supporting locals, "helping" local farms	Most is organic	Want to be a sustainable hotel, Cayuga Collection		
Hotel Belmar	3250	vegetables	Most produced on their own farm	Do not know of reliable local farms	Supplement their own growing capabilities	Greens and on-property vegetables	Highly focused on sustainability		
Monteverde Lodge	3600	lettuce, thyme, rosemary, cilantro, parsley, beet leaves	greens	Orlando	more fresh, promote community development, easier to restock, don't purchase some for quality, variety, and commitment to establishing business w/ constant production	no, could switch if price/quality was acceptable	price and quality fruit from MV is hard to find and not always organic	see sheet 2	
Mariposa B&B	60	banana, pineapple, watermelon, cilantro, sweet peppers, rice, beans	cilantro, rice, beans, coffee	finca la vela (san luis), cafe san luis	Benefit community and keep \$ local	yes		email (maybe)	
Historias	600	pineapple, cheese platanos, coffee	lettuce, tomatoes, plantains	la cruz, tourine (cafe)	under table deals, do not pay taxes would buy more local because it helps keep community close, cheaper from a local source	yes	easy to find	no	Orlando
Heliconia	70	watermelon, pineapple, papaya, bananas, zucchini, cabbage, greens, coffee	cheese from MV cheese factory	volco agricola (sp?), le juerte (sp?)		"I think so"	price may be a deterrent	kilo of papaya 2500/kilo	1820 brand coffee This is a very big hotel. They claim to have talked to local farmers but the farmers can not supply the demand that they need. 155 rooms. coffee company they use provides machines for each room use Underable deals better because no taxes
EI Establo	9300	Everything. List to be emailed	broccoli, cauliflower, zucchini, cabbage, potatoes, sweet peppers, onions	Orlando	more fresh, better control over quality, local farmers can't produce the large quantity they need	"100% organic from orlando, 1/2 organic from zarcerocerasada"	important but too expensive	email (maybe)	
Manakin Hotel Bellbird	600	watermelon, banana, pineapple	cafe, bread greens	alajuela Orlando	Better to help neighbor and its higher quality	"Organic fruits for sure" Organic from orlando	better	see pictures NA	

Appendix I

Results of Farmer Interviews

Farmer Name	Where did you learn to farm	What is grown commercially	Organic?	Experience with		Interested in agriculture group	Interested in organic certification	Interested in Classes on Organic Farming	What they want out of agriculture group	where are crops sold?	Would you grow more?
				Associations, Coops, etc in Past							
Finca de Alvaro y Eliza	Family	Coffee, Sugar Cane	Organic Not Certified	No Prior Experience	Interested in Group	Interested in Certification	Yes	Networking	On Farm	No	
Café San Luis	Cooperative	Coffee	Sustainable	Prior Experience	Maybe	Interested in Certification	Yes	Increasing Product Availability	On Farm, in Stores, To Businesses		
Finca de Noam's Neighbor	Family	No Products Grown Commercially	Sustainable	Prior Experience	Interested in Group	Interested in Certification	Yes	Seed Sharing	Products Not Sold Commercially		
Lindor Salazar	Family	Coffee	Conventional	Prior Experience	Interested in Group	Interested in Certification	Yes	Learning Organic Farming Practices	Within Community	Maybe	
Aaron	Unknown	Asian greens, heirloom tomatoes, chayote, potatoes, onions, tumeric, perennial greens, citrus, lettuce, zucchini	Organic Not Certified	No Prior Experience	Interested in Group	Not Interested in Certification	Yes	Seed Sharing, Increasing Product Availability, Composting, Technical Workshops	Within Community	Yes	
Allergy Fruit	Unknown	Yampi, yucca, onion, lettuce, cilantro, avocado, potato, coffee, citrus, passionfruit, beans, sugar cane	Organic Not Certified	Prior Experience	Interested in Group	Interested in Certification	Yes	Community Tool Sharing, Seed Sharing	Within Community, To Businesses		
Anibel	Family	onions, carrots, beans	Organic Not Certified	Unknown	Interested in Group	Interested in Certification	Yes	Increasing Product Availability	On Farm	Yes	
Benito	Family	Dairy	Organic Not Certified	Prior Experience	Interested in Group	Interested in Certification	Yes	Increasing Product Availability	In Stores, Within Community	Maybe	
		Kale, blackberries, radishes, peppers, figs, passion fruit, tree tomatoes, tomatillos, tomatoes, turnip, carrots, parsnip, herbs, citrus, asparagus, sweet potatoes, mango, papaya, bananas									
Rose	Canada		Organic Not Certified	No Prior Experience	Interested in Group	Maybe	Yes	Compost Sharing, Networking	Products Not Sold Commercially		
SL Road Farm	From an american	Lettuce, cilantro, corn, garlic, beans, onions, squash, cabbage	Organic Not Certified	Unknown	Interested in Group	Unknown			Within Community		
		Coffee						Group Tours, Seed Sharing,			
Sanctuario Ecologico Orlando	Family, Youtube	greens	Organic Not Certified Sustainable	Prior Experience Unknown	Interested in Group Maybe	Interested in Certification Unknown	Yes No	Increasing Product Availability	On Farm To Businesses	Yes	

Appendix J

Results of Consumer Family Interviews

Family Letter	What about this farm share service do you like?	Is it a priority for you to purchase organic produce?	Do you have any friends who would be interested in purchasing organic produce, but don't know where to find it?	Do you know where this produce is grown?	Is it a priority for you that your produce is sourced from local farms?	Would you be more likely to buy from a service like this knowing the produce is both organic and from the local region?
A	just moved here	Yes	Yes	no	Preferred	Yes
B	just moved here, better quality than supermarket, large variety	Yes	Yes	some	Yes	Yes
C	organic, local, better quality than supermarket	Yes	Unsure	no	Preferred	Yes
D	convenient, reliable, healthy, good price	Yes	Unsure	some	Preferred	Yes
E	fresh, local, good price	Yes	Yes	no	Yes	Yes
F	large variety, better quality than supermarket, good price	Yes	Unsure	some	Yes	Yes
G	organic, better quality than supermarket, large variety	Yes	Yes	no	Preferred	Yes

Appendix K

Results of Association Research

Association Name	Do the bylaws include a section on:		
	The name	The purposes	The location of the offices
US Trout Farmers Association	No	Yes	Yes
Association for Vertical Farming	Yes	Yes	Yes
American Soybean Association	No	No	No
US Lavender Growers Association	Yes	No	Yes
Organic Farmers Association	Yes	Yes	No
Sustainable Farming Association of Minnesota	No	No	No
Quebec Farmers' Association	Yes	Yes	No
The Irish Farmers' Association	Yes	Yes	Yes
NSW Farmers Association	No	No	Yes
Pennsylvania Young Farmers Association	Yes	Yes	No
NFU Scotland	No	No	No
MAOPAC	Yes	Yes	Yes

Association Name	Do the bylaws include a section on:					
	Membership Guidelines					
	Criteria for Membership Eligibility	Categories of Membership	Term of Membership	Membership Fees	Termination of Membership	Rights of Members
US Trout Farmers Association	No	Yes	Yes	Yes	Yes	No
Association for Vertical Farming	Yes	No	No	Yes	Yes	Yes
American Soybean Association	No	Yes	No	Yes	Yes	No
US Lavender Growers Association	Yes	Yes	No	Yes	Yes	Yes
Organic Farmers Association	Yes	Yes	No	No	Yes	No
Sustainable Farming Association of Minnesota	No	No	No	Yes	No	No
Quebec Farmers' Association	Yes	No	No	Yes	No	No
The Irish Farmers' Association	No	Yes	Yes	Yes	Yes	No
NSW Farmers Association	Yes	Yes	No	Yes	Yes	No
Pennsylvania Young Farmers Association	No	Yes	No	Yes	No	No
NFU Scotland	Yes	No	No	Yes	Yes	No
MAOPAC	No	Yes	No	Yes	Yes	Yes

Association Name	Do the bylaws include a section on:				
	Membership Meetings				
	Once Yearly	> Once Yearly	Special Meetings Can Be Called	Notice of Meetings	Quorum
US Trout Farmers Association			Yes	Yes	Yes
Association for Vertical Farming			Yes	Yes	Yes
American Soybean Association			Yes	Yes	Yes
US Lavender Growers Association			No	Yes	No
Organic Farmers Association			Yes	Yes	Yes
Sustainable Farming Association of Minnesota			No	No	No
Quebec Farmers' Association			Yes	Yes	No
The Irish Farmers' Association			Yes	Yes	Yes
NSW Farmers Association			Yes	Yes	Yes
Pennsylvania Young Farmers Association			No	No	No
NFU Scotland			Yes	Yes	Yes
MAOPAC			Yes	Yes	No

Association Name	Do the bylaws include a section on:			
	Governing Structure			
	Board of Directors	Governing Council	Branches	Executive Board
US Trout Farmers Association	Yes	No	No	No
Association for Vertical Farming	Yes	No	No	No
American Soybean Association	Yes	Yes	No	No
US Lavender Growers Association	Yes	No	No	Yes
Organic Farmers Association	No	Yes	No	No
Sustainable Farming Association of Minnesota	Yes	No	No	No
Quebec Farmers' Association	Yes	No	No	No
The Irish Farmers' Association	No	No	Yes	No
NSW Farmers Association	No	No	Yes	No
Pennsylvania Young Farmers Association	No	No	No	Yes
NFU Scotland	Yes	No	No	No
MAOPAC	Yes	No	No	No

Association Name	Do the bylaws include a section on:			
	Board Of Directors			
	Makeup of the Board	Election to the Board	Responsibilities of the Board	Removal From the Board
US Trout Farmers Association	Yes	Yes	Yes	Yes
Association for Vertical Farming	Yes	Yes	Yes	No
American Soybean Association	Yes	Yes	N/A	N/A
US Lavender Growers Association	Yes	Yes	Yes	Yes
Organic Farmers Association	N/A	N/A	N/A	N/A
Sustainable Farming Association of Minnesota	Yes	Yes	Yes	Yes
Quebec Farmers' Association	Yes	Yes	Yes	No
The Irish Farmers' Association	N/A	N/A	N/A	N/A
NSW Farmers Association	N/A	N/A	N/A	N/A
Pennsylvania Young Farmers Association	N/A	N/A	N/A	N/A
NFU Scotland	Yes	Yes	Yes	Yes
MAOPAC	Yes	No	Yes	No

Appendix L

Recommended Phases of Development for the Association



Productores Sostenibles de Monteverde (PSM) Phases

1. Function: To bring together producers and consumers of the local region.

Bring together parties which are interested in networking at a preliminary meeting. The group will likely have multiple meetings before moving on to the next stage. At the initial meeting we will provide our recommendations based upon research in Monteverde including recommended bylaws and documents on government recognition processes.

2. Function: Solidify membership

Determine exactly which farmers are interested in membership through attendance at the first few meetings, and establish regular meeting times/places. It is recommended that initially the group meet more often than once a year in order to move forward with development based on the voices and opinions of the general membership.

3. Function: Develop clear governing structure

The membership may vote on changes and specifications to the bylaws. Additionally, the membership should vote on a board of directors.

4. Function: Gain Government Recognition

This stage can be accomplished by following the five stages provided by INFOCOOP in order to become a governmentally registered organization. INFOCOOP can provide assistance with promotion, training, funding, and more.

5. Function: Provide members of the organization with opportunities to attend classes about organic and sustainable farming practices.

Bring in outside resources, such as MAG and INA to orchestrate classes on organic / sustainable practices. Develop contact with sources that can assist in seed sharing and organic composting services.

6. Function: To provide services, such as subsidized organic certification, seed sharing, and access to organic composting.

Seek funding, which will enable the purchase of a model farm / space dedicated to organization / subsidized organic certification.

Appendix M

Suggested Bylaw Guidelines



Productores Sostenibles de Monteverde (PSM) Bylaws

ARTICLE I - NAME AND PURPOSES

Section A. Name

The name of this association shall be *Productores Sostenibles de Monteverde* (hereinafter referred to as PSM).

Section B. Purposes

The purposes for which this association is formed are as listed:

1. To unite sustainable producers within the greater Monteverde region
2. To promote better consumer-producer relationships
3. To develop an outlet for discussing issues specific to farming in the Monteverde microclimates
4. To encourage continued education on organic and sustainable farming practices
5. To provide increased access to resources key to successful sustainable farming
6. To acquaint members with agriculture legislation

ARTICLE II - MEMBERSHIP

Section A. Requirements for Membership

In order to be considered for membership in PSM the producer must meet the following criteria:

1. Be located within the greater Monteverde region
2. Use sustainable or organic production practices

If a producer meets these criteria, they may become a member of PSM through payment of annual dues. Exemptions can be granted upon a request to the Board of Directors and a $\frac{2}{3}$ majority approval by the Board.

Section B. Repercussions of Late Dues

At such a time as a member becomes in debt of a year of dues, the member loses all benefits associated with membership. At a debt of two years' worth of dues or higher, membership may be revoked.

ARTICLE III - TERMINATION OF MEMBERSHIP

Section A. Termination of Membership

Termination of Membership in PSM can occur at any time pursuant upon a $\frac{2}{3}$

majority vote by the Board of Directors. There shall be no reimbursement of dues or any portion thereof upon termination.

Section B. Reasons for Termination

Membership termination may be considered for any of the following reasons:

1. The actions of the member are deemed detrimental to the goals, objectives, and programs of the association
2. The member is in debt of a minimum 24 months dues without exemption
3. A member is found to no longer meet the criteria for membership within PSM

ARTICLE IV - MEETINGS OF THE MEMBERSHIP

Section A. Annual Meeting

PSM will possess an annual meeting of the members at such a time as decided upon by the Board of Directors. This meeting will occur for the purpose of information dissemination to the general body members as well as serving as a place to hold discussions and votes on actions taken by the association on behalf of its members.

Section B. Extraordinary Meetings

Extraordinary meetings of the membership may be called by the President, or a majority of the Board, or by petition of a minimum of 20% of the voting members. Should an Extraordinary Meeting be called by petition of the voting membership; the Secretary shall preside over the meeting.

Section C. Notice of Meetings

Notice of any meetings of the general body will be given to members a minimum of 3 weeks before the date of the meeting except in special circumstances. If an emergency or special meeting is to be held less than 3 weeks from the decision to hold such meeting occurring, notice of the meeting must be given to members as soon as possible. At any time within the window after notice and before the meeting a member may send communication to the Board as to reasons why the member cannot attend.

Section D. Quorum for Voting Meetings

The quorum for voting to occur at any general body meeting of the association shall be 40% of the active voting membership. Quorum may be waived by a 2/3 majority vote of the Board of Directors.

ARTICLE V - BOARD OF DIRECTORS

Section A. Board of Directors

The business and affairs of the association shall be managed by a Board of Directors consisting of 6 members. The Board of Directors shall meet once a month to discuss association business.

Section B. Makeup of the Board

The Board of Directors of the association will include a President, a Secretary, a Treasurer, 2 vocales (general voting members) and a Fiscal.

Section C. Election to the Board

Active voting members are eligible for election to the Board of Directors. Each year the general body will vote on 6 directors to fill the Board including voting

specifically, to fill the positions of President, Secretary, and Treasurer. A simple majority is required in any vote.

Section D. Responsibilities of the Fiscal

The Fiscal shall be a voting member of the Board of Directors who gives a report of the actions of the board to the general membership at the yearly meeting. The Fiscal is not required to attend meetings of the Board but may do so at any time.

Section E. Removal From the Board

If a member of the Board of Directors is found to match any criteria for termination of membership within the association they will be removed from office and an emergency replacement will be elected. If a member of the Board undergoes a change in membership status and is no longer an active voting membership they may be removed from office by a simple majority vote of the other directors.

Appendix N

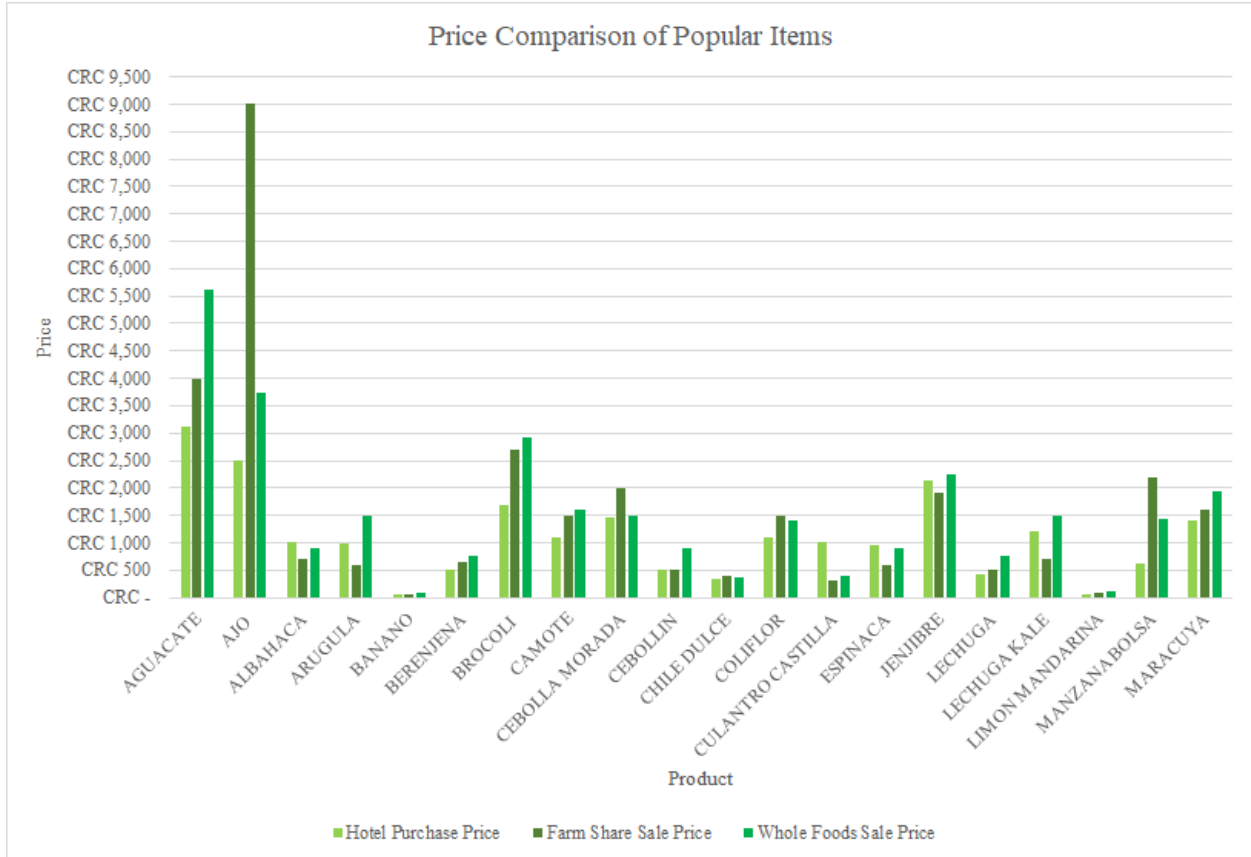
List of Potential Consumers

Cientes Potenciales para el Grupo

John (El dueño de Whole Foods en Monteverde)	Senda +011 (506) 4001 6349
Paula (La coordinadora para los productos agrícolas a Foresta)	Mariposa B&B +506 2645 5013
Hotel Belmar Richard Garro sostenibilidad@hotelbelmar.net +506 2645 5201	Historias Lodge +506 2645 6914
Atardecer	Heliconia +506 2645 5145
Poco a Poco +506 2645 6000	El Establo +506 2645 5110
Ficus +506 2645 6616	Manakin +506 2645 5080
Santa Fe +506 2645 6050	Hotel Bellbird +506 2645 5026
Monteverde Lodge Federico Barrantes fbarrantes@costaricaexpeditions.com +1 800 672 8704	

Appendix O

Consumer Produce And Price Data



List of Products that are desired by consumers and are currently being produced by local farmers:

Asparagus	Chard	Green Beans	Peppers
Avocado	Chayote	Herbs	Pineapple
Banana	Cilantro	Kale	Radishes
Beans	Citrus	Lettuce	Spinach
Blackberries	Coffee	Mango	Sweet Potatoes
Cabbage	Cheese/Dairy	Onions	Tomatoes
Carrots	Corn	Papaya	Yucca
Celery	Garlic	Pasionfruit	Zucchini

List of additional products desired by consumers:

Apples	Melon
Artichoke	Mushrooms
Beets	Ñampi
Bok Choy	Orange
Broccoli	Peas
Cauliflower	Plantains
Cucumber	Plum
Dandelion	Strawberries
Eggplant	Tamarind
Eggs	Tiquisque
Ginger	Watermelon

Appendix P

Fact Sheet about membership in Productores Sostenibles de Monteverde



Productores Sostenibles de Monteverde

Facts and Information for
Potential Members

with help from



Mission

To unite local farmers in Monteverde by offering assistance in the sale of their products, maintenance of their farms, and sustainability of their practices. PSM aims to revitalize the agricultural community in Monteverde while using earth-friendly practices that ensure the natural beauty of the area remains intact.

Why PSM?

- Training from experts on topics such as sustainable farming, organic farming, and composting
- Access to a detailed list of businesses to facilitate sale of products
- Discounts on products such as compost
- Contact details of helpful resources for things like buying organic seeds and compost
- Support for the local economy
- Opportunities for seed sharing
- Access to community tools

Goals of PSM

- Unite local farmers with area businesses
PSM will provide resources and connections to facilitate the sale of member's products
- Help local farmers become more productive
PSM will bring in outside training resources to teach members how to make the most of their farm
- Become recognized by government
With government recognition, PSM can work to obtain an association-wide organic certification
- Grow membership through networking
Members of PSM will have freedom to invite interested individuals to join and contribute to its growth and development
- Provide funding from government and private sources
PSM will help member farmers apply for grants to obtain funding to improve their farm and productivity

Benefits of Sustainable Farming

- Environmental conservation
- Reduction in pollution
- Healthier food for the community
- Positive social and environmental impacts
- Increased biodiversity and healthier ecosystems

Join Today!

For more information or to join, please contact:

Noam Sirota

Phone:

Email: paradisecafe.mv@gmail.com

MAG

Email: jumana@mag.co.cr

Appendix Q

List of Interested Farmers

Agricultores interesantes

Nombre	Nombre de Finca
Noam Sirota	Finca el Jardin
Christopher Huertar	Santuario Ecologico
Eliza	
Benito Guindon	Guindon Farm
Lindor Salazar	
Aaron	Finca la Carencia
Anibel Torres	
Jose Campos	
Mario Castro	

Appendix R

List of Resources

Gente Servicial

Nombre	Propósito
Justin Welch	El abono orgánico
Eric Semeillon	Semillas orgánicas, Finca para capacitaciones
Eliza	Procesamiento de la caña de azúcar(trapiche)
Fabricio Camacho	Los plantones orgánicas
MAG	El uso espacio para reuniones
John	Whole Foods Monteverde, Asesoramiento de mercado