

Executive Summary

This paper will explore the topic of connecting smallholder organic farmers in the Cusco region of Peru to local markets, with a focus on tourist restaurants and hotels. Research was conducted in the summer of 2018, which included interviews with local smallholder farmers (referred to as Ricardo, Hugo, Veronica, Juanita, and Cynthia in the following sections) and restaurant and hotel owners, in addition to a survey of over 200 tourists. This research, in addition to a thorough literature review, revealed many challenges that smallholder farmers are facing in the region, as well as opportunities to address these challenges. It will review topics including food sovereignty, the economic context of agriculture in Peru, environmental issues, public health, the valuation of traditional knowledge in agriculture, stigmas of farmers, and rural to urban migration. It will discuss the role that EcoHuella, the demonstration agroecology farm of the local NGO Andean Alliance, is playing to address these issues. The vision of EcoHuella, in accordance with many of the others farmers interviewed, is the liberation of smallholder farmers. One avenue to achieving this liberation, which calls for more autonomy, agency, and self-esteem for these farmers, is through local market access. The following sections will explain how market access can address these challenges in order to achieve farmer liberation.

Introduction

Smallholder farmers in Peru in the Sacred Valley and surrounding highland communities, owning farms with 5 hectares of land or less, have seen radical changes to their practices and livelihoods in the past several decades, including environmental, public health, economic, agricultural, and sociocultural shifts. With the introduction of conventional and more “modern” agricultural techniques during the Green Revolution in the 1980s, including the use of fertilizers and chemicals, many traditional and more sustainable agricultural techniques were devalued and lost, which consequently reduced diversity in crops and diets and fostered the degradation of soil fertility. During an interview, a local farmer in Calca, Veronica, recounted that people have become so accustomed to using fertilizers and chemicals that now, even though there has been a shift to value organic farming more (farming without the use of chemical inputs), it is proving difficult to change people’s behaviors and methods. Many government and NGO projects have attempted to implement organic farming projects with local farmers; however, in many cases, their intermediary role (as engineers, technicians, transportation/logistics coordinators, etc.)

created a dependency. When these projects ended, many farmers were unable to continue producing and/or selling their produce.

Many farmers interviewed discussed that they still grow organically for personal consumption, because of the positive health benefits, but struggle to find profitable markets to sell their organic produce. There are many complexities of this shift to growing organic crops, including the introduction of more vegetables and fruits into the diets of locals and the loss of people cultivating as many native crops such as potatoes, beans, and grains. In addition, livelihood security is further undermined by the stigma of a campesino/campesina lifestyle in which outside actors—such as the state—reject the value and merit in living an agrarian lifestyle. This devaluation of agriculture, and subsequent lack of self-esteem of farmers, has led others, especially youth, to shift to other professional opportunities. Moreover, with the increase of work and study opportunities in nearby Cusco, agriculture is no longer viewed as the most prominent nor profitable livelihood option for youth. These factors, and more which will be discussed in depth in this paper, have contributed to a major shift in the agricultural sphere in the Cusco region.

With the ever-growing tourism in the region, new local markets are opening up that value both organic and local, smallholder produce. Through various interviews with restaurant/hotel owners and a survey of tourists in Cusco and the Sacred Valley (the results of which are included in the Appendix at the end), it is clear that there is a demand. Restaurants and hotels in Cusco and the Sacred Valley, which cater mostly to tourists, have identified that organic/local produce is important to their image. There are farmers and associations in the Sacred Valley who are already growing organically and cultivating crops that are in demand; however, accessing these local markets continues to be a pressing challenge. In interviews with several local organic/ecological farmers, many said that they are unsure how to get in contact with the right people at these hotels and restaurants and are unsure of their logistical needs. All of these farmers wanted to expand their production and sales. This issue and desire to access local markets was a recurring theme in nearly every interview conducted.

When getting to the heart of why market access is so important to these farmers, an overarching concept emerged: liberation. Many farmers expressed this concept in different terms--independence, autonomy, freedom to live, and growing how they wanted to. With economic autonomy, they do not need to depend on governments, NGOs, or other external entities to impose top-down “solutions”. Rather than having an external actor define what “development” is for them, they would be free to “develop” as they see fit, for themselves, their families, and their communities.

The Andean Alliance for Sustainable Development (AASD), also known as the Alianza Andina para el Desarrollo Sostenible, is a small NGO established in 2011 whose agriculture projects are founded on the local strengths of Andean communities, utilizing the collective knowledge of farmers in the Valley to improve ecological production. They are reimagining the traditional top-down approach and utilizing a horizontal one through which smallholder farmers share information with each other. Workshops and hands-on trainings are conducted so that farmers can collaborate on how to sustainably grow more diverse and nutritious produce. The AASD’s demonstration farm, EcoHuella, is a hub for these workshops and knowledge sharing. By bringing smallholder farmers together and inviting their knowledge into the workshops, they develop a better sense of self-esteem and pride in their work. In an interview with a local farmer, Ricardo, who works with Andean Alliance and EcoHuella, he explained that with this increased self-esteem,

“...estas comunidades empiezan a pensar y plantear su propio desarrollo. Cuando ya empiezan a hacer su propio desarrollo, ellos mismos con sus errores y con todo que tengan que llevar esto, ellos se van a sentir autónomos y se van a sentir libres. No van a depender de nadie para nada. Entonces esto es lo que buscamos con Alianza Andina y con todo eso: Dale un real desarrollo y no un desarrollo que solo esté en el documento...como la mayoría de las instituciones hacen. La pobreza es un beneficio...es un lucro. El nombre de la pobreza es el lucro. Eso es: da las herramientas para la superación de estos agricultores. Y la liberación nada más viene cuando empiezan a trabajar duro por ellos mismos, y entonces así van a empezar a cruzar el camino hacia el desarrollo.”

“...these communities start to think about and design their own development. When they have begun their own development, with their own mistakes and all they have to bring to it, they will feel autonomous and they will feel free. They will not depend on anyone for anything. This is what we look for with Andean Alliance and all we do: give them real development and not development that is just in documents...like the majority of the institutions do. Poverty is a benefit...it's a profit. The title of poverty is the profit. This is what it is: provide the tools so the farmers can overcome. And liberation only comes when they start to work hard for themselves, and so they will begin to cross to the path towards development.”

Ricardo, and others, believe that market access can be a powerful tool for farmers to gain this liberation. With market access and liberation, many of the aforementioned challenges can also be addressed. Smallholder farmers would be able to choose the most environmentally and culturally appropriate methods to farm, which would allow for specific environmental and public health issues to be addressed (this will be discussed in depth in the following sections). Many farmers interviewed believe that with increased local market access, more farmers will be encouraged to grow without chemicals, which will have ripple effects on the land and provide more organic produce within the communal markets. With economic autonomy, the social and cultural stigma of agriculture may change, opening up opportunities for traditional knowledge to gain a resurgence and encouraging more youth to participate in agriculture. This, in turn, could have positive outcomes in terms of economic growth for this region and the country. Through our interviews, we have already seen that market access through organic agriculture is opening up income-generating opportunities for women, who have always had a prevalent, yet usually unpaid, role in agriculture. While not the only path to liberation, market access appears to be a vital mechanism in order to bring farmers closer to this goal.

In the following sections, key concepts will be explained and the challenges and current situation of smallholder agriculture in the region will be discussed. This will be followed by an explanation on how local market access will assist farmers in reaching a state of food sovereignty and liberation. The limitations on this theory of market access

leading to liberation will be identified, and information and quotes from interviews conducted with farmers and restaurant owners conducted in the summer of 2018 will be incorporated. As a whole, this paper argues that market access can be a tool for promoting the liberation of smallholder farmers in the Peruvian Andes.

Food Sovereignty

Although the concept of liberation is a common theme among the farmers in the Sacred Valley, it is also linked to a global phenomenon referred to as food sovereignty. Food sovereignty is a concept coined in 1996 by the international social movement, La Vía Campesina (The Peasant's Way), which advocates for the rights of peasants and smallholder farmers around the globe (Vía Campesina, n.d.). Food sovereignty promotes local knowledge and resources as the key to solving many of the world's food-related issues, targeting neoliberal trade policies as the root of many of the struggles that smallholder farmers face (Martínez-Torrez & Rosset, 2010). Vía Campesina defines food sovereignty as:

“...the right of peoples to healthy and culturally appropriate food produced through sustainable methods and their right to define their own food and agriculture systems. It develops a model of small scale sustainable production benefiting communities and their environment. Food sovereignty prioritizes local food production and consumption, giving a country the right to protect its local producers from cheap imports and to control its production. It includes the struggle for land and genuine agrarian reform that ensures that the rights to use and manage lands, territories, water, seeds, livestock and biodiversity are in the hands of those who produce food and not of the corporate sector” (Vía Campesina, n.d.).

As a movement, food sovereignty aims to address not only food-related problems, but also those related to independence, fair employment, respect, and justice for smallholder farmers. The aim of food sovereignty is the liberation of farmers to grow culturally-appropriate food using their own sustainable methods—having the autonomy and the opportunity to make decisions for themselves and their communities. Food sovereignty has become the more

sustainable and appropriate alternative to food security, and many international agencies and governments have adopted the concept into their policies and agendas. It “has gained tremendous popularity and echo in civil society sectors of nations both North and South and has been developed into a holistic and internally coherent alternative framework” (Martínez-Torrez & Rosset, 2010, p. 160). In an interview with the local farmer Veronica, she echoes food sovereignty’s connection to liberation:

“Generalmente liberación es como hablar la diferencia entre soberanía alimentaria y seguridad alimentaria. Seguridad alimentaria es generalmente cuando como sea tú puedes traer cualquier producto para poder llenar la olla de tu familia, pero soberanía alimentaria es ser algo libre: haces tú, produces todo lo que tienes allí, comes lo que tienes. Te sientes libre porque no dependes mucho de otras personas para hacer tus cosas. Eso es para mí.”

“In general, liberation is related to the difference between food sovereignty and food security. Food security is generally when you are just able to get any product to be able to feed your family, but food sovereignty is to be free: you make it, you produce everything that you have there, you eat what you have. You feel free because you do not depend much on other people to do your things. That’s what it is for me.”

Whereas market access from a neoliberal lense is certainly a part of the problem in the oppression of farmers,

“food sovereignty argues that food and farming are about much more than trade and that production for local and national markets is more important than production for export from the perspectives of broad-based and inclusive local and national economic development, for addressing poverty and hunger, preserving rural life, economies and environments, and for managing natural resources in a sustainable fashion” (Martínez-Torrez & Rosset, 2010, p. 160).

Food sovereignty has a strong focus on the local aspect of agriculture: “on local autonomy, local markets, local production-consumption cycles, and farmer-to-farmer networks that promote agroecological innovations and ideas” (Altieri & Toledo, 2011, p.

607). This vision of local market access and farmer-to-farmer networks is what the Andean Alliance and EcoHuella are aiming for and currently working towards. They aim to suggest an alternative form of “extension” and “economy” that are layered to address the heterogeneity of challenges currently facing different bodies of farmers and extension agents. In order to better understand the complexities of market access and agriculture for smallholder farmers in the Sacred Valley, it is necessary to describe the economic state of Peruvian agriculture as a whole and how the mountainous Sierra region is situated within this context.

Economic Context

The Peruvian economy has been one of the fastest growing economies in the Latin America region (Morris et al., 2017). Structural reforms to the financial and labor markets in the 1990s, along with trade liberalization helped stimulate a period of growth that continued through the following decades. From 2000-2014, Peru’s GDP grew by an average of 5.3% per year despite a weak global economy (Morris et al., 2017). However, the source of this growth has been uneven across regions of the country.

Peru’s natural geography divides the country into three different regions: the Costa (western coast) containing 23.7% of the country’s agricultural land, the Sierra (central highlands and Andes) with 46.3% of the agricultural land, and the Selva (eastern Amazon forest) with 30.1% of the agricultural land (INEI, 2012). However, the Costa region contributes to 49% of the country’s total agricultural GDP, whereas the Sierra and Selva regions contribute to only 37% and 14% of total agricultural GDP, respectively (Morris et al., 2017). Additionally, the agricultural sector has grown 3.3% from 2000 to 2015, largely because of the growing export economy which has been concentrated in the Costa region. In contrast, growth has stagnated in the Sierra and Selva regions.

The inequality in growth is also reflected in the recorded rates of poverty across the regions. For example, according to the National Institute of Statistics and Information (INEI), the

domestic poverty rate has declined from 42.4% in 2007 to 27.8% in 2011 (poverty line being defined as 272 soles or less per month using 2011 prices). Yet, rates in the coastal region declined from 29.3% to 17.8% over the same period. In the Selva region, poverty declined from 55.8% to 35.2%, the large difference possibly in part because of the strength of the coffee economy (Quiroga & Tolmos, 2009). But in the mountain region, the rate declined from 58.1% to only 41.5% in 2011. These percentages are even higher in rural areas of the country. In 2017, 48.7% of the rural population in the Sierra region were categorized as living in poverty (338 soles or less per month), the highest out of all the regions.

Agriculture plays an important role in the Peruvian economy, contributing about 7.3% of the country's GDP and providing approximately one in four jobs in the country (Morris et al., 2017). Peru has approximately 5.5 million hectares of farmland, of which 100,000 hectares is used for intensive agriculture in the coastal region, relying on modern technology such as irrigation systems and nontraditional export products, such as asparagus, paprika, artichokes, and mangoes (Quiroga & Tolmos, 2009). Another 2.6 million hectares are owned by small-scale producers engaged in traditional agriculture and low-input technologies that grow rice, coffee, corn, and potatoes. Within Peru, the 2012 Census found that 80 percent of farms consisted of less than 5 hectares that engage in low-output farming.

These smallholder farms, or chacras, are characteristic of the Sierra region. Out of the 1.81 million self-identified smallholder farmers in the 2012 National Census of Agriculture, 68% are located in the Sierra. Because of the varying altitudes, the average total farm size ranges from 3.2 hectares to 1.9 hectares at higher altitudes (compared to averages of 6.4 and 5.7 hectares in the Selva and Costa regions, respectively) . These chacras are largely family-owned and have been primarily maintained for subsistence. As a result, many of them have limited access to markets and price information that would help them enter the formal market economy.

Government surveys conducted in 2003 and 2005 “found evidence that barely 8% of farmers use some sort of price information [...], while approximately 50% of crops are produced

to be sold” (Quiroga & Tolmos, 2009). Although the 2012 Census has found that there has been a large move toward commercial agriculture in the past couple of decades in the Sierra region, with 42% of harvested area committed to marketed crops (an increase from 15.5% in 1994), it still shows a larger allocation of farmland to self-consumption than in other regions, where 81% of harvested areas are devoted to market production in the Costa region and 67% in the Selva region (Morris et al., 2017).

The economic reforms of the 1990s gutted government support for the agricultural sector. In addition to price liberalization of basic food, policy changes included, “elimination of subsidies on agricultural credit, closure of state corporations for rice distribution and the sale of agricultural inputs, reduction of personnel in the Ministry of Agriculture, withdrawal of the state from extension activities” (Trivelli et al., 2003, p. 33). While these reforms were meant to encourage private investment in the country and thus increase commercial farming opportunities, various factors in rural smallholder communities have discouraged investment in market opportunities. For example, a study in the southern mountain region of Peru found that because smallholder farmers prioritized growing for self-consumption, they were less likely to engage in crop specialization because of uncertainties in the climate and market prices (Trivelli et al., 2003). Additionally, competition from cheaper, imported products and higher costs associated with higher yields further disincentivized the shift to commercial farming. Nevertheless, the overall impact of liberalization on smallholder farmers is uncertain. Because smallholder farmers have been detached from the market economy, they may have been shielded from any negative impacts that have hit those markets.

In the past decade, the potential for growth beyond subsistence farming and opportunities for poverty reduction has motivated the Peruvian government (ex. Ministry of Agriculture) and development NGOs to implement various initiatives to increase productivity and market competitiveness in the rural Sierra region, such as agricultural extension programs. However, these programs and services have had low degrees of success in encouraging farmers to adopt new technologies (Quiroga & Tolmos, 2009). In conversations with local farmers in the Cusco

region, either government aid has been minimal, for example an installation of an irrigation system, or non-existent. Government projects that have been introduced in the area have often had limited sustainability. Veronica has seen many government programs come through the Cusco region. In describing these projects, she notes:

“...esos proyectos productivos sólo tienen una duración de sólo tres o cuatro años. Y en esos tres o cuatro años a veces no se ve los resultados tantos porque a la agricultor, le falta hacer más lo que es el fortalecimiento en sus conocimientos más que todo.”

“...these productive projects only have a duration of three or four years. And in these three or four years, sometimes the results are not seen as much because there is a lack of strengthening of knowledge for the farmer more than anything.”

In January 2017, the AASD investigated the effect of agricultural extension programs in the Peruvian Andes, and found that the lack of trust from farmers and collaboration with the local communities were significant in the failure of these interventions.

Yet government and international organization initiatives have pushed for increased commercialization and use of conventional farming methods to increase agricultural competitiveness in the global market. For example, the World Bank has recommended increased productivity through improved access to purchased inputs such as fertilizers, crop chemicals, and improved seed varieties (Morris et al., 2017). On the other hand, AASD's conversations with local smallholder farmers have revealed a resistance to working with chemicals because of concerns for the potential negative impact on their family's health and environmental health, leading to steadfast commitment to grow products “naturally”.

The investment in organic farming practices does not necessarily disadvantage small-scale farmers from market access. In contrast to conventional farming, which is distinguished by a high degree of crop specialization or monocultures, organic farming methods do not involve the use of synthetic fertilizers or pesticides. Studies on organic farming methods around the world have shown that ecological practices can result in increased agricultural

productivity and incomes (Binta BA & Barbier, 2015). Because of the lowered costs from purchasing fewer inputs (ex. pesticides or fertilizers), and locally available technology, any economic losses that may come as a result of crop failure are lessened. Additionally, studies have also shown that farmers with established organic farms (after completing a conversion period to organic) had crops that were less vulnerable to natural disasters, such as drought, and pests (Cacek & Langner, 1986).

As public interest in environment and personal health grows, the demand for organic products has also increased. Local communities around Peru have organized bio-ferias (weekly eco-markets) selling local organic products, which have generated an annual revenue estimated at 3 million USD (UNEP, 2012). AASD interviews with chefs and owners in high-end restaurants in Cusco and surrounding towns reiterated a clear preference to work with organic products because of improved taste and quality, along with customer demand. This information was supported by a consumer survey conducted in Cusco and surrounding towns in the Sacred Valley, which showed a general willingness to pay more for organic food in restaurants (Appendix).

Despite the demonstrated demand for organic products, many smallholder farmers do not have the information and communication tools needed to access these markets. By directly establishing connections between farmers and these markets, farmers would be able to develop their knowledge of this area while being able to independently explore viable market opportunities for themselves that would be more sustainable in the long run.

Ecological and Human Health

Smallholder farming communities are abundant in a large variety of ecosystems in the South American Andes. Of the most popular are those communities in the 'Green' Andes which stretch from northern Ecuador through Colombia and Venezuela; the 'Yellow' Andes of central Peru and eastern Bolivia; and the 'high climatic risk' Andes of southern Peru and the Bolivian altiplano (highlands) (Hellin & Higman, 2005). Altitudes vary from sea level to over 4500 m and

local people's livelihoods, especially those in the 'high climatic risk' Andes, are threatened by highly variable climatic conditions—that are increasing in severity due to climate change—that can bring drought, floods, frost, or hail within one growing season (Hellin & Hignman, 2005). Thus, many communities cultivating in the highland areas are prone to food insecurity and, consequently, malnutrition (Berti et al., 2014).

In addition, livelihood security is further undermined by the stigma of a *campesino/campesina* lifestyle in which outside actors—such as the state—reject the value and merit in living an agrarian lifestyle. Hence, the repudiation of subsistence agriculture has historically paved the way to the introduction of high-yielding agricultural methodologies, such as chemical fertilizers, that have reduced diversity in crops and diets and has fostered the degradation of soil fertility and environmental quality through pushing for the specialization of commercial crops. Thus, it is essential to recognize that there is no one type of farmer and hence the challenges facing agriculture cannot be generalized into a one size fits all rhetoric. This research, in turn, aims to suggest an “alternative” form of “extension” and “economy” that is layered to address the heterogeneity of challenges currently facing different bodies of farmers and extension agents. Specifically, this research will describe the current state of the respective challenges that must be considered when introducing market access in the Peruvian Andes. First and foremost, however, there is a need to clearly define the diversity of farmers this model of extension and economy seeks to liberate.

Defining the Smallholder Farmer

For most of human history, family farms utilizing traditional agricultural practices were the norm. Today, those family farms are frequently categorized as smallholder farms, meaning the farm consists of 20 hectares of land or less (Tal, 2018). Although small scale farming is often categorized as organic, this is not the case for all smallholder farmers. Thus, this research will suggest two main categories of small-holder farmers—the ‘organic’ subsistence farmer and the ‘conventional’ commercial farmer. Although there is a myriad of definitions and sub-definitions for the respective categories, both types of farmers will be defined with respect to

those practices and methodologies that encompass “traditional food systems” and “industrial agricultural systems”.

Traditional Food Systems

In the Andean context, traditional food systems are often equated with subsistence farming and non-commercialized farming. Although subsistence farming--or traditional food systems--can take place in a variety of ecosystems, today subsistence farmers are more likely to occur in the ‘high climatic risk’ ecosystems where there is little, if any, access to markets. Primarily due to their inaccessibility, it is feasible to suspect that subsistence farmers are more likely to utilize the practices and methodologies equated with traditional Andean food systems than commercial farmers who have been affected by external influence such as agricultural technicians. Broadly speaking, traditional food systems can be described as the “systems of cultivation, processing, storage, trade, and consumption, which are specific to particular geographic regions, and whose origins generally pre-date large-scale industrial agriculture” (Saxina et al., 2016). Hence, drawing upon the respective definition, Andean traditional food systems would be composed of those crops that have been developed through trial and error over millennia to become resilient to the previously discussed volatile environmental conditions and (Oyarzun et al., 2013). Among the most successful crops to cultivate—primarily using manual or non-industrial processing and cultivation techniques—are grains such as quinoa (*Chenopodium quinoa* W.) and lupin (*Lupinus mutabilis* S.); roots and tubers such as the potato (*Solanum tuberosum* and *S. spp.*), mashua (*Tropaeloum tuberosum*), melloco (*Ullucus tuberosus* C.), oca (*Oxalis tuberosa* M.); legumes such as tarwi (*Lupinus mutabilis*); and animal protein such as *charke* (llama or sheep jerky) (Oyarzun et al., 2013 and Saxina et al., 2016). These foods comprise the “traditional Andean diet” and are recognized for their high nutritional value of amino acids, proteins, and N-fatty acids (Ayala 2004; Repo-Carrasco 1992; Repo-Carrasco, Espinoza, and Jacobsen 2003; Rivera 1999).

This traditional food system has primarily proven to be successful due to its strong diversification of species/varieties and altitudinal zones. For example, in the Sacred Valley of Peru, the potato is cultivated in an altitude range of 3,400 and 4,600 meters and brings together

1,334 varieties; the array of landscapes and crop varieties has acted as a type of crop insurance in that produce can virtually be guaranteed regardless of climatic pressures (Grau, 2017). Additionally, Andean residents traditionally participated in patterns of large-scale, long-distance trade with members cultivating in other agro-ecological regions—this phenomenon, in Andean studies, is termed “verticality” (Saxena et al., 2016). This “verticality”, in turn, has historically allowed families to overcome the food insecurity characteristic of the pre-harvest season in their respective agro-ecological region (Gillespie, 2015). However, it is incredibly easy to romanticize subsistence farming as an outsider. The Andean traditional food system, although containing an incredible body of knowledge, is hard work and is not always successful. In comparison to industrial agricultural systems, yields in smallholder organic farms tend to be lower; in addition, extreme environmental conditions are continuing to hurt this traditional agriculture system (Saxena et al., 2016). For example, one farmer this research interviewed, Cynthia, commented on the current state of the environment and said,

"El clima ha cambiado la forma en que los papas y habas crecen debido a enfermedades y gusanos. Ahora necesitamos tratamiento para estas cosas [con el fin de cultivar estos cultivos nativos]. "

(The climate has changed how the papas and habas grow due to diseases and worms. We now need treatment for these things [in order to grow these native crops].)

In Andean Bolivia, agriculture is being impacted by climate change as described in local reports observed by farmers (Saxena et al., 2016). A study in four of Bolivia’s departments, representing the major agricultural ecotypes, reported that farmers had observed changes in the maximum and minimum seasonal temperatures in addition to increased danger in unseasonable, crop-damaging frost (Saxena et al., 2016) Similarly, production was threatened by increases in rainfall in tropical regions, and decreases in montane or arid region—a phenomenon farmers believed to be influenced by increased deforestation (Saxena et al., 2016). Research by Saxena et al. 2016 also suggest that household food processing will also be influenced by a changing climate—especially as it relates to toxic plant chemicals—like those bitter saponins found in the native crops quinoa (*Chenopodium quinoa*) (Saxena et al., 2016). Considering that foods grown in high altitude environments like the Andes often evolve secondary metabolites for self-defense

(from UV or grazing from high-altitude mammals), Andean farmers have traditionally relied on the climatic conditions of wind, water, sunlight, temperature, etc. to detoxify crops; however, a changing climate is breaking through the historical resiliency and longevity of the Andean traditional food systems (Saxena et al., 2016).

Industrial Agricultural Systems

Industrial agricultural systems rely primarily on hybrid seeds or genetically “improved” varieties of major food staples such as the potato (Saxena et al., 2016). Additionally, instead of relying on the local practices of trade, marketing, and consumption that are encompassed in traditional food systems, industrial agricultural systems often rely on the technologies and methodologies of conventional agriculture. However, before going into the characteristics of conventional agriculture, it is first important to briefly define the context in which conventional agriculture was introduced.

The “Green Revolution” refers to the development of seeds of high yielding varieties (HYVs) that seemingly led to the transformation of agriculture in the developing world as the result of agricultural research, extension and infrastructural development, from the 1940s to the 1960s (Dowie, 2001). While the implications of the Green Revolution are highly controversial, there is little doubt that this set of production practices relied heavily upon the integration of “Mendelian genetics, applied plant breeding, the ability to manufacture and market inexpensive nitrogen fertilizer (cf. Smil, 2004), and the controlled supply of water through irrigation technologies” (Thompson, 2007). Thus, the respective collection of practices is frequently referred to as “conventional agriculture” where conventional agriculture then becomes the all-inclusive term to represent an industrial agricultural system in which farmers utilize synthetic, chemical inputs (Tal, 2018).

The use of nitrogen fertilizers has led to adverse effects for environmental health (Fields, 2004). Excess nitrogen in soil has induced groundwater contamination, eutrophication in water bodies, and increased greenhouse gas emissions with respect to nitrous oxide (Fields, 2004). The high-levels of nitrogen in soil from nitrogen fertilizers result in high concentrations of nitrate

(NO₃⁻) in crops which can harm human health (Liu et al., 2014). Additionally, beyond the direct negative implications of nitrogen fertilizer, the reduction in crop diversity that is often a product of commercialization reduces the diversity of microbial communities and their functions in agricultural systems which in turn contributes to the depletion of soil health.

Beyond the direct environmental implications of industrial agriculture, specialization and commercialization has negatively impacted human health. The inadequate intake of some micronutrients is common in many developing countries, but the extremely low intake of dietary fat found in the central Andes is not common amongst the developing world (Gillespie, 2015). Past research suggests that thiamin, niacin, and vitamin C intakes were usually adequate while intakes of most other micronutrients, including iron, zinc, vitamin A, riboflavin, vitamin B12, folate, and zinc were low, likely resulting in high levels of inadequacy (Gillespie, 2015). In one study in Peru, the burden of dietary stress was shown to fall most heavily on families during the rainy, pre-harvest season (Gillespie, 2015). This study found that poorer households during the pre-harvest season obtain more than half of household energy intake from purchased foods whereas the wealthier households in this study region of Peru tend to consume more calories from locally produced foods (Gillespie, 2015). Thus, due to a lack of access of cash sources, poorer households must buy foods that are low in the previously mentioned micronutrients such as pasta or rice (Gillespie, 2015). Although pre-harvest food insecurity can be characteristic of a traditional agriculture system, the specialization of commercial crops—such as the one described in Gillespie, 2015’s research—eliminates the diversity of native crop species that would traditionally provide a nutrient-rich diet.

Moreover, research by Oyarsun et al., 2013 saw that a large number of families dedicated the greatest area of their land to commercial crops, in particular the potato, onion or field bean, while planting in small areas crops for self-consumption and medicinal purposes. Andean species, such as quinoa, mashua, and local potato varieties, were rare and, if grown, only in small areas (Oyarsun et al., 2013) During the harvest season, the potato constituted more than 50% of total food items ingested while sugars, noodles, rice and oats together corresponded to around 15%. (Oyarsun et al., 2013). Meat consumption was scarce (Oyarsun et al., 2013). Vegetables, in

particular garlic (*Allium sativum* and *porrum*), onion (*Allium cepa*), parsley (*Petroselinum crispum*), cilantro (*Coriandrum sativum*), and lettuce (*Lactuca virosa* and *sativa*), were consumed in smaller quantities that was virtually negligible by weight to the overall diet (Oyarsun et al., 2013).

A New Direction for Agriculture

Many of the farmers this research consulted were not cultivating commercial crops such as the potato or onion, rather, female farmers in the Cusco Region of Peru were cultivating vegetables such as Cebolla china, lechuga, broccoli, coliflor, nabo, rabonito. One female farmer, Veronica, described why she was cultivating vegetables instead of native crops:

"La gente ha dejado de cultivar patatas porque no son tan rentables, mientras que las hortalizas son más rentables".

(People have stopped farming potatoes because they aren't as profitable, whereas vegetables are more profitable.)

Additionally, Cynthia, another female farmer, said that she is growing vegetables because she, "quiere más para ella y su familia." (She wants more for herself and her family). Although the introduction of non-native crop species into agricultural systems introduces a myriad of complexities surrounding the loss of traditional food systems, it cannot be ignored that environmental and human health pressures have catalyzed the need for a new way of agriculture that can sustain local people's livelihood in addition to providing smallholder farmers with agency to have a successful harvest on their own terms. Veronica, another female farmer, said:

"Siempre hay una relación porque los métodos tradicionales o de los antiguos, hay muchas cosas que rescatar, y también adaptar nuevas tecnologías. Se tiene que trabajar de la manera conjunta con esos métodos, con el moderno y el tradicional, combinar, adaptar."

(There is always a relationship because the traditional methods or the old ones, there are many things to rescue, and also to adapt new technologies. One has to work in the way together with those methods, with the modern and the traditional, to combine, to adapt.)

Like this farmer said, new technologies can complement the methodologies and practices characteristic of traditional food system. In fact, an organic way of agriculture, or an agriculture that does not use synthetic chemical inputs, is often equated with the practices of traditional food systems, or a time prior to the Green Revolution. Juanita, another female farmer, describes the current state of the environment and how utilizing an organic farming system can alleviate some of the consequences said:

“El clima está cambiando porque estamos haciendo cosas como quemar plástico. Antes teníamos temporadas que eran muy diferentes y tenía fechas específicas. Pero ahora, todo está cambiando (llueve cuando, o nieva siempre). No hay estaciones marcadas ahora... Me gustaría entrar en los corazones y las mentes de todos para decirles que no quemen el plástico, que no usen productos químicos, que no tiren cosas en el río... Con la agricultura orgánica la tierra puede rejuvenecerse (recuperarse), al igual que una célula humana. Pero si continuamos con enormes negocios/industrias contaminantes, será realmente difícil ”.

(The climate is changing because we’re doing things like burning plastic. Before we had seasons that were very distinct and had specific dates. But now, everything is changing (it rains whenever, or snows whenever). There are no marked seasons now... I would like to enter into the hearts and minds of everyone to tell them not to burn plastic, not to use chemicals, not to throw things in the river... With organic agriculture the earth can rejuvenate itself—just like a human cell. But if we continue with huge businesses/industries contaminating, it will be really difficult.)

“Organic”, in its most general definition, refers to an agricultural system that does not use chemical inputs. However, there are many definitions of “organic” and thus there are many limitations to simply proposing “organic” agriculture as a way to overcome the current environmental and human health threats. For example, organic farming systems that do not challenge monoculture (or the lack thereof crop diversity), rely on external inputs (such a “natural” fertilizers), or require foreign and expensive certification papers for an “organic” label, offer little to smallholder farmers (Altieri and Toledo, 2011). Keeping farmers dependent on an input substitution approach, like organic agriculture, does little to facilitate farmer liberation. Additionally, there is not always a market for organic agriculture that can sell at a higher premium than conventional agriculture. Thus, there is a need to move farmers toward the

productive and collaborative of farming systems that would, in turn, move them away from dependency and towards liberation such as agro-ecological practices.

Agro-ecology, moreover, is a phenomenon that seeks to liberate farmers through providing a set of scientific, methodological, and technological practices (Altieri and Toledo, 2011). Agro-ecological based production systems transition the existing industrial food systems away from fossil fuel based production—that manifests in agroexport crops and biofuels—towards an “alternative” agriculture that is “biodiverse, resilient, energetically efficient, socially just and comprise the basis of an energy, productive and food sovereignty strategy” (Altieri 1995, Gliessman 1998). Thus, agroecology becomes a paradigm that encourages local/national food production by smallholder farmers based on local innovation and resources (Altieri and Toledo, 2011). Ultimately, at the core of agroecology, is to go beyond alternative farming practice and develop agroecosystems that have minimal dependence upon expensive, high energy chemical inputs while celebrating both modern and traditional crops (Altieri and Toledo, 2011).

Thus, provided that this research shows that there is a strong demand by consumers, restaurant owners, and smallholder farmers for locally and organically produced products in the Cusco Region, this research suggests that farmers, extension agents, food processors, chefs, and government/and non-governmental agencies utilize an alternative approach to knowledge transfer that draws upon the philosophies and practices characteristic of agro-ecological farming system while concurrently complementing traditional food systems. Although there is no one method of agro-ecological farming, this paper will draw upon the fundamental assumptions of bio-intensive agriculture as promoted by the association of farmers working with the EcoHuiella demonstration farm in Sacclio, Peru. In turn, bio-intensive agriculture becomes a system of agriculture that is implemented uniquely dependent upon farmer’s preferences, the environmental conditions, and the technologies available. Additionally, bio-intensive agriculture becomes an opportunity for knowledge transfer from farmer to farmer, from ag-technician to farmer, from farmer to consumer, from farmer to government workers and more.

Bio-intensive agriculture is an organic farming system that seeks to achieve maximum yields with minimal land (Folnovic, 2015). Past research suggests that bio-intensive agriculture consists of four key components: “agriculture, water, infrastructure and tools” (Guerrero Leal et al., 2015). In deciding when to plant or perform activities for certain crops, producers utilize their experience and knowledge with the seasons (Guerrero Leal et al., 2015). Then, the more technological practices used in implementing this production process involves transforming the ground into porous soil by first defining the area of the beds and then double digging the respective areas in order to allow air to enter the soil and increasing water access (Guerrero Leal et al., 2015).

The majority of bio-intensive beds are outside (84.4%) whereas 15.6% are inside greenhouses (Guerrero Leal et al., 2015). The most popular tools used to construct bio-intensive beds are the shovel, rake, pitchfork and wheelbarrow (37.8%) (Guerrero Leal et al., 2015). Specifically, this practice of constructing bio-intensive beds involves digging about 60 cm deep into the soil while incorporating organic matter into the respective hole, then, after the next 30 or 40 cm, digging another trench and continuing this process in a straight line to finish with the bed (Jeavons, 2007). By planting crops closer to one another than recommended in commercial and traditional agriculture recommended, the space is used more efficiently (Guerrero Leal et al., 2015). The fundamental principles of bio-intensive agriculture, moreover, are “double digging, use of compost, close planting, association and crop rotation, use of open-pollinated seeds, cultivation for the production of compost and carbon generation and calories, comprehensive care” (Flores, 2005). Additionally, bio-intensive agriculture typically utilizes manual watering that is typically practiced every third day (Flores, 2005).

Fertilization of bio-intensive vegetable beds, moreover, is based on organic compost and control of pests and diseases is supported by natural products in the region in order to prevent harming the environment and human health (Guerrero Leal et al., 2015). Most of the producers utilizing bio-intensive systems do not have modern irrigation system for their vegetables, and often recycle the water they use in other household activities such as laundry or washing dishes (Guerrero Leal et al., 2015). With respect to nutrient recycling, the use of animal manure as

fertilizer contributed to increased levels of nutrients and organic matter in soil and reduce the problems of some weeds, pests and diseases as well as soil erosion (Guerrero Leal et al., 2015 and García, 2008).

Conclusion

As insinuated by this example of bio-intensive agriculture, agroecosystems can be designed to exceed the yields of industrial agricultural systems, utilize the knowledge of traditional food systems, and provide a diverse and highly-profitable return without forcing farmers to be dependent upon the inputs of chemicals. With respect to the Cusco Region, there is already a market for organic and local produce as determined by the surveys and interviews conducted throughout this research. Additionally, the current system of knowledge dissemination taking place at the EcoHuella demonstration farm provides farmers, extension agents, food processors, chefs, and agricultural-based programs to collaborate with one another to develop an agroecosystem that promotes smallholder farmer liberation in ways that meets market demand and promotes human and environmental health.

Cultural Knowledge

In addition to the human health and environmental benefits of promoting agroecological practices in the Peruvian Andes, such practices have the potential to uphold cultural heritage. Recent trends, such as commercialization and changes in land use, have threatened the sustainability of traditional food systems. For many rural communities, agriculture has historically played a large role in culture; thus, loss of food systems can be linked to a loss of cultural heritage. Traditional food systems, in addition to their tie to culture, are also associated with biodiversity and nutritious diets (Johns and Sthapit, 2004). Therefore, agricultural practices which promote traditional food systems can uphold cultural heritage and its associated environmental and health benefits. Daugstad et al. (2006) suggest that cultural heritage is a “collective good” produced by agriculture. Cultural heritage, as it relates to agriculture and food

systems, could be physical objects, areas influenced by agricultural land use, or experience-based knowledge of resource use and management (p. 70). Importantly, the relationship between agriculture and cultural heritage is place-specific and context-specific; agriculture has the potential to either uphold or threaten cultural heritage. In the Daugstad et al.'s case of Norway, agriculture plays a central role in rural Norwegian communities and thus has been considered an upholder of cultural heritage. Similarly, agriculture has historical and cultural importance in the Peruvian Andes. Juanita, a small-scale farmer from Urubamba, relates her livelihood as a farmer to Incan ancestry: "Desde nuestras Incas, la agricultura es la base primordial." (Since our Incas, agriculture is the fundamental base). Agriculture, in promoting traditional food systems and farming practices, holds the potential to serve as a caretaker for indigenous and rural culture in the Peruvian Andes.

Traditional food systems, such as those rooted in Peruvian culture, also offer potential ecological and health benefits. Traditional crops and varieties represent an important source of biodiversity. However, this agricultural biodiversity has been threatened by market factors which alter traditional cropping patterns. "Biocultural diversity" refers to the relationship between traditional knowledge, biological diversity, and cultural diversity, suggesting that biodiversity and cultural practices may be sustained in tandem (Johns and Sthapit, 2004). In the context of Peru, agricultural biodiversity exists in the numerous native potato species and other unique crops suited for the high-altitude Andean climate, such as quinoa. Furthermore, the same contemporary trends which threaten environmental sustainability and biodiversity also threaten nutrition and diet-related health. The "nutrition transition" in Latin America describes the process by which urbanization and globalization have led to high rates of noncommunicable diseases (Johns and Sthapit, 2004). In general, countries which have retained strong traditional food systems have lower rates of such chronic diseases. This trend can be explained by the tendency of traditional diets to have intertwined cultural, ecological, and health components. The relationship between traditional diets and health stems from the benefits of dietary diversity, the nutritional value of certain crops, and the lack of processed foods associated with contemporary diets (Johns and Sthapit, 2004). Juanita, the farmer from Urubamba, recognizes a difference

between her ancestors who ate healthy, natural foods and didn't get sick, and people today who eat processed foods and suffer from diseases like diabetes. Therefore, promoting traditional food systems interweaves ecological and health benefits with the protection of cultural heritage.

Active agriculture is one method of promoting the culture heritage associated with traditional food systems. Daugstad et al. define active agriculture as a production system based on economic outcomes from producing food and fibre" (p. 68). They suggest it is the "most sustainable strategy in order to secure cultural heritage and other economic values" (p. 68). For example, the Norwegian Directorate for Cultural Heritage advocates for "protection through use," or active farming, as a means of sustaining traditional crops and securing "experience-based knowledge" (p. 74). However, the effectivity of active agriculture for upholding cultural heritage is not ubiquitous. Daugstad et al. analyzed a range of official documents from national and international actors, and their findings did not reach a consensus. While some documents suggest that active agriculture is needed to maintain cultural heritage, others suggest that economic-based agriculture is a threat to cultural heritage. For example, the Organization for Economic Cooperation and Development (OECD) maintains that the cultural heritage aspects of food systems can be separated from active, or production-driven, agriculture because the relationship between agriculture and cultural heritage is purely historical and not present in the contemporary role of farming. In contrast, certain Norwegian government and farmers organization documents see contemporary farmers as primary upholders of the cultural heritage associated with agriculture. The traditional knowledge which belongs to farmers is not something of the past, but is a present means for sustainable development (Daugstad et al., 2006).

If active agriculture is driven by economic outcomes from food production, then market access is key for small farmers to reap the potential benefits of active agriculture. Only with access to markets can farmers maintain the active agriculture that has potential to uphold their cultural heritage. Farmers can economically benefit from their use of traditional foods and practices if their products are marketed in such a way which appeals to consumers (Johns and

Sthapit, 2004). In the Peruvian Andes, there is a consumer demand for organic and local foods (see appendix). Because the traditional practices of local farmers do not use chemicals, there is potential for these farmers to tap into, and benefit from, the demand for organic and local produce. Daugstad et al. identify tourism as key for making cultural heritage an asset; they suggest that the cultural heritage of agriculture and the economic outcomes of tourism are mutually dependent on each other. Similarly, in the Cusco region, much of the consumer demand for local and organic foods lies in the tourist sector. The alignment between Andean farmers' traditional food systems and the demand of contemporary tourist markets suggests that active agriculture could be an effective means of upholding cultural heritage in this region.

However, there are certainly limitations and risks to advancing market access and economic-driven agriculture as a caretaker for cultural heritage. Commodifying cultural heritage through tourism risks compromising the “authenticity” of culture – romanticizing and objectifying it in a way which meets consumer expectations rather than reality (Daugstad et al., 2006). If traditional foods and food systems are to be marketed, the farmers who produce them have a right to informed choice and democratic participation (Johns and Sthapit, 2004). This means that farmers must have the agency to market their products in ways which feel most representative and authentic. They also must have direct market access to promote autonomy, rather than relying on an intermediary that risks exploiting farmers and creating dependency. Ricardo, a lead farmer at EcoHuella, contends that campesinos have been conditioned to think they are poor and underdeveloped, and that they are not capable of their own development. Therefore, marketing and selling their products could generate self-esteem by granting value to their traditional practices and cultural heritage. This is, of course, if they have direct and autonomous access to markets such that it fits into the larger narrative of farmer liberation.

Upholding cultural heritage through market-based active agriculture means respecting farmers' traditional knowledge, but also not boxing farmers into a sort of static and “preserved” culture to meet consumers' romanticized expectations. Cultures evolve over time, and cultural heritage is just as much about current cultural practices as ancestral ones. Active agriculture

cannot be a sustainable approach because unless “cultural heritage can find its place within some kind of modernized functional system, conservation is limited to cultural monuments and cannot remain as living culture” (Daugstad et al., 2006, p. 78). An approach to avoid bounding cultural heritage in the past is to promote “biocultural innovations” (Swiderska et al., 2018). Biocultural innovations blend traditional knowledge and science. The International Institute for Environment and Development (IIED) proposes biocultural innovations as a means to enhance food security, resilience, livelihoods, and biodiversity. Already the Convention on Biological Diversity has recognized the importance of traditional knowledge, innovations, and practices for conservation efforts. IIED conducted the Smallholder Innovation for Resilience (SIFOR) study to investigate biocultural innovations among small farmers. SIFOR identified over 500 biocultural innovations, in response to climatic or socioeconomic challenges, which have improved productivity, incomes, climate resilience, nutrition, environmental health and climate change mitigation. Despite these fruitful findings, the study contends that most farmer-led innovation remains unrecognized and unexplored by formal researchers (Swiderska et al., 2018).

As Hugo, another farmer at EcoHuella, states, no one values small farmers, and professionals assume they know nothing. But in reality, they know a lot because they have been farming for hundreds of years and knowledge has passed down generations. However, “Si no los escuchas, cómo vas a saber que conocimientos tienen?” (If you don’t listen to them, how will you know what knowledge they have?) The IIED study argues that promoting biocultural innovation requires policies and investments which support farmer-led innovation. Although disseminating agricultural science through linear transfer to farmers might increase productivity, it risks contributing to the loss of traditional knowledge and sustainability (Swiderska et al., 2018). Ricardo’s own insights directly align with the suggestions of the IIED study. He contends that top-down, or linear agriculture development projects don’t work because engineers would tell farmers how to do things but then not care if their methods failed. Instead, explains Ricardo, farmers have the ability to experiment and develop their own ideas. Relatedly, EcoHuella does not operate through a model of vertical transfer. Ricardo has farmers share their knowledge with him and each other first before offering methodologies. This process of farmer-led, collaborative

knowledge transfer and experimentation represents the type of biocultural innovation needed to ensure that the marking of cultural heritage does not confine farmers within a consumer's romanticized vision of the past.

Although many contemporary trends threaten the sustainability of rural and indigenous cultures, promoting traditional food systems through active agriculture has the potential to uphold cultural heritage. Moreover, in the case of many traditional food systems, health and ecological benefits would be advanced alongside cultural awareness. Active agriculture supports living cultures rather than relegating them to the past through economic-backed sustainability. In Peru, there is a market, largely based in the tourism sector, for the local and organic food produced through traditional practices. However, farmers must have direct market access, and the autonomy to market their products how they wish, in order to support the overall narrative of farmer liberation. Biocultural innovations, the blending of traditional knowledge and science, should be recognized as a means to not limit farmers to a romanticized vision of the past. Such innovations must be farmer-led and involve horizontal knowledge transfer. As a result, active agriculture which upholds cultural heritage will also promote the self-esteem and liberation that comes from valuing experience-based, traditional knowledge.

Migration and Stigma

The Phenomenon of Migration and its Potential Proximate Causes

Among the many threats to smallholder farming in Peru- and the cultural heritage and knowledge systems that it upholds- a pertinent and relevant theme is the growing rate of Peru's population residing in cities. When asked about the role of youth in agriculture in interviews, many farmers have said that their children have no interest in working on the farm and that "la gran mayoría tiendan a migrar a las ciudades" ("the large majority tend to migrate to cities"). Opinions about whether children would ever return to work the farms are mixed; for instance, this same farmer, Veronica, believes that "después que pasa un cierto tiempo de 5, 6 años vuelve reclamar los terrenos que antes tuvieron de sus padres" ("after a certain time of five or six years passes they return to reclaim the land that their parents owned"). However, others have stated

that their children are studying and pursuing a career, in which case it is less likely that they will return. The consistent rate of urban growth in Peru- based on World Bank data- also indicates that people are not returning to the farms (World Bank 2017). Notably, not many farmers have actually expressed concern regarding this trend. Whether that is because there is ambiguity surrounding the future of agriculture or because they genuinely do not view it as a problem is uncertain, but it is important to clarify that this is something the Andean Alliance as researchers have decided may be a point of concern rather than having been identified by the communities themselves. That being said, it is a relevant theme to explore because it could be a problem in the future, and because it reveals serious social and economic issues that affect smallholder farmers.

There are a variety of reasons that urbanization could be happening in Peru. In the literature, it is generally accepted that the main driving factor of rural-urban migration is the search for better jobs, education, and other opportunities in cities (Leinaweaver 2016; Sabates 2000). This may seem obvious and straightforward from a Western perspective, but it is important to question why these are driving factors to understand the deeper societal changes that are affecting agriculture in Peru. Why do people seek education and better wages? Have they always sought these things? Previous research and literature can provide some insight. Gina Crivello of the University of Oxford conducted a fifteen year study of children from impoverished families in both urban and rural families in Peru to better understand motivations and patterns of migration. She identifies “the growing centrality of education” as necessary to ‘become somebody’ and escape poverty (Crivello, 2009, p. 12). Another study conducted by Jessica Leinaweaver of University of Manitoba focuses on specifically rural-urban migrant families in Lima and Ayachuco, finding that this type of migration is often part of an effort to ‘improve oneself’ or ‘get ahead’ (*superar*) in terms of one’s socioeconomic situation (Leinaweaver, 2016, p. 60-61). It is implicit in Leinaweaver’s study that improvement of oneself is actually, more accurately, an improvement over one’s family- an improvement over a life of agricultural work. In Crivello’s study, among rural families, it is explicit that parents do not want their children to go into agriculture. A mother refers to agricultural work as a threat: “the

machete is waiting” if her son does not finish school, and he must do so because “it’s not a time for not having studies, not anymore” (Crivello, 2009, p. 12).

The end of this statement, ‘not anymore’ - in addition to the claim that education has a ‘growing’ centrality- is particularly interesting because it suggests a change, that pursuing a formal education is something that is newly necessary. In attempting to understand this, a first speculation may be that it is becoming harder to support oneself by farming. There is evidence both to support and refute this- according to the World Bank, rural incomes have increased in between 2004 and 2015 and poverty has decreased (World Bank, 2017, p. 18), but this may be due to the fact that rural families have been turning more frequently to non-agricultural sources of income (p. 23). In addition, as mentioned in the economic section of this paper, where there is agricultural growth, it may disproportionately benefit larger coastal farmers and not be accessible to smallholders, especially those in the highlands (Duedenhofer, 2018). This threat to smallholder agriculture is why a large part of the Andean Alliance’s recent work has been to help small farmers access better markets for their products in Peru. Market access has been identified by farmers as something they need and want, and also something that is necessary to support smallholder farming more broadly. One farmer named Juanita has noticed the recent decline in interest in agriculture, and believes that “si hay acceso al mercado, yo sé que sí, las personas pueden animarse trabajar nuevamente” (“if there is access to markets, I know that yes, people can be reanimated to work again”). This has also been identified by the Food and Agricultural Organization of the United States as important to the problem of youth leaving agriculture because they “do not perceive agriculture as a remunerative or prestigious profession, and until they find meaningful economic opportunities and attractive environments in rural areas, they will continue to migrate to cities” (FAO, 2016).

Changing Values and Stigmatization

However, while market access is important- and is central to this paper’s main argument- this is not a holistic view of the issue. In addition to economic obstacles, changing values and perceptions surrounding agriculture have greatly affected the number of youth who are interested

in farming. The same farmer quoted above explains that when she and her siblings grew up “teníamos que dedicarnos a la madre Tierra” (“they had to dedicate [themselves] to the land”), but “hoy en día la juventud no les gusta la agricultura- quieren otros profesiones de oficina, tienen vergüenza de labrar la tierra” (“today children do not like agriculture- they want office jobs and are embarrassed of [working] the land”). A change in attitudes surrounding agriculture is evident in Leinaweaver’s study too: while at first she introduces subsistence farming as “the respectable and ethical Andean peasant lifestyle of hard work engaged in by the parents of many of the young people with whom I spoke” (Leinaweaver, 2016, p. 62) she also notes that now, “morally, moving beyond mere subsistence is widely admired” (Leinaweaver, 2016, p. 63). In this case, ‘moving beyond subsistence’ is used to refer to moving onto non-agricultural work, not just to selling one’s products. In these examples, this conflict is contemporary and intergenerational, which seems to often be the case, but it may be even more deeply rooted in Peru’s history. Ricardo, the main farmer on the Andean Alliance’s demonstration farm, EcoHuella, explains where he thinks the ideological shift regarding agriculture began:

“Pero, se inventa la palabra ‘pobreza,’ a las personas que no viven igual a los sitios urbanos. [...] Entonces los tratan como pobres. [Las organizaciones internacionales] les hacen creer de que lo que hacen ellos no estaba bien. De que ellos no estaba haciendo las cosas bien. Eran pobres, eran pobres porque estaban haciendo lo que estaban haciendo. [...] Les hablan mucho de desarrollo pero no sabían que es desarrollo. Estas comunidades no saben que es desarrollo. Ellos les dicen que el desarrollo es tener dinero, tener plata, ir a las universidades, comer mejor, y todo esto. [...] De repente comprar las ropas en la tienda, comprar la comida en la tienda, comprar todo en la tienda entonces esto es desarrollo. Todo que ustedes están haciendo es pobreza”.

“But, they invented the word ‘poverty,’ for people who don’t live equal to urban places. [...] Therefore they are treated like poor people. [The international organizations] make them believe that what they did was not good. That they were not doing things well. They were poor, they were poor because they were doing what they were doing. [...] They talk a lot about development but they don’t know what development is. The communities don’t know what development is. They say that development is to have money, to have silver, to go to the universities, to eat better, and all this. [...] Maybe to buy clothes in the store, to

buy food in the store, to buy everything in the store and then that is development. Everything they are doing is poverty.”

These ideas are be part of the reason why children are embarrassed to go into even commercial agriculture, and feel like they have to study to escape poverty. In this narrative, working in agriculture is made to be be synonymous with poverty, and completely incongruous with prosperity and development. Of course, rural poverty does exist, and farmers isolated in the highlands face many obstacles to economic development and accessing markets for their produce. Education may be the logical next step for many families, and the intention here is not to say that people should not pursue an education if they want to, but that agriculture should not be completely devalued as a viable lifestyle. In addition, people should not be embarrassed to be farmers because an agricultural lifestyle may not live up to Western standards of prosperity. One goal of the Andean Alliance is to change the negative perception of farming as backwards and help support small agriculture’s viability for those who do want to continue being farmers. This can mean two things: supporting farmers who want to live a lifestyle of subsistence, and supporting those who are interested in being commercial farmers. This paper focuses on the latter, but the former is just as respectable, and it is important to mention because the above quote is more about attitudes towards subsistence farming.

That being said, these ideas still permeate contemporary attitudes and negatively affect smallholder commercial farmers in the Sacred Valley today. In fact, it is such a problem that when asked what his vision is for EcoHuella, Ricardo stated that the most important thing is that “las pequeñas agricultores sean muy respetados” (small farmers are very respected). The type of disrespect farmers face occurs on many levels, largely in the political field but also during day-to-day interactions and business. Hugo, another representative of EcoHuella, explains that “hay agricultores que casi nunca bajan a las ciudades, están más en sus comunidades trabajando, y cuando bajan se sienten un poco menos [...] [y] no tienen esta facilidad de comunicación, de relacionarse con la gente” (“there are farmers that almost never go down to cities, [...] and when they go down they feel a little less [...] [and] they do not have this ease of communication, of relating with people”). He also describes discrimination they face in markets, where, for

example, customers try to pay them lower prices. These experiences show how negative perceptions of farmers have real consequences: they internalize it and it affects their confidence, and in turn inhibits both their willingness and ability to access markets. Therefore, the broad question of success of smallholder farming is not just a question of technical market access but farmer self-esteem and autonomy.

Feelings of being taken advantage of and looked down on have been recorded in other studies, and a connection has been made between these feelings and the desire to be educated. Crivello observes that a primary reason Peruvians seek an education is to be “better able to defend [themselves] in the world,” a sentiment expressed mostly among “rural communities who are increasingly part of a wider, knowledge-based society” (Crivello, 2009, p. 23). Of course, it should be considered that this could be partially due to the increasing pressure for formal education that contributes to stigma against a life of agriculture. However, it is also a serious need identified by farming communities and is integral to Ricardo and Hugo’s vision for farmer liberation. Ideally, they want farmers to have the social and business skills to confidently seek market opportunities on their own and “buscar su propio desarrollo” (“pursue their own development”). Therefore, supporting the social needs of farmers and building their self-esteem and ability to be autonomous is a central part of the Andean Alliance’s work, and is just as important as identifying market opportunities. Without this sort of support, farmers may not be able or confident enough to take advantage of those opportunities. Even without the question of market access, it is simply an effort to fight discrimination and fight for respect for farmers.

Agricultural Knowledge Systems at Risk

Part of respecting farmers and supporting their development is valuing their knowledge. It is clear that there has been an ideological shift where formal education is seen as more and more necessary- and in the process other types of non-formalized knowledges have been devalued, including agricultural knowledge. Anthropologist Jenny Cockburn conducted a study of local knowledge systems and knowledge transfer as it related NGO work in rural Bolivia.

Through her interviews of farming families, she finds that “mothers and fathers, typically with only a few years of primary school behind them, compared themselves to their children, who, thanks to easy access to high school, now ‘know things,’ in contrast to their parents' perceived lack of knowledge” (Cockburn, 2015). In this study, as well as Crivello’s and Leinaweaver’s, children and their parents aspired for them to be ‘professionals,’ a word reserved for someone with “any non-manual, salaried [...] job” (Crivello, 2009, p. 12). The fact that this term is reserved for jobs and would not be, for instance, used to refer to someone who knows about agriculture, shows a valuing of certain bodied of knowledge over others. Someone can be very knowledgeable in agriculture and still be seen as unintelligent because they did not pursue a formal education, and do not have a piece of paper to show for their knowledge. This type of attitude can discourage people, especially youth, from pursuing agriculture, and certainly contributes to the discrimination against farmers and campesino recorded in interviews.

One implication of these shifting cultural attitudes is that if knowledge is not valued, then it can easily be lost. Of course, as Cockburn’s paper warns, knowledge is not static and agriculture can evolve, but these farmers hold important understandings about the Andean landscape, native varieties of crops, and the most effective growing techniques in this climate. According to the majority of farmers interviewed, this knowledge has largely been passed down and taught through families, with the exception of some farmers that have gained training in governmental extension projects (Patabamba interviews). These are distinct forms of knowledge-sharing, different mainly because the latter functions as a top-down flow of knowledge, where people are told how to do something by an ‘expert’ rather than work together, or horizontally, towards understanding and producing knowledge (Cockburn 2015; discussions with other students). Interviewed farmers have expressed their opinions about ‘expert’ knowledge- Veronica believes that “el agricultor es el que sabe más porque ha vivido años, conoce su suelo, conoce como vive todo eso...entonces hay que compartir esas experiencias para tener mejores resultados” (“the farmer is the one who knows the most because they have lived years, know their land, know how to live like this; therefore it is necessary to share these experiences to have the best results”). Hugo speaks on a similar theme, and explains that despite

native farmers knowing best, “los ingenieros, los agrónomos, los profesionales [...] [no] les quiere escuchar [a los pequeños agricultores]” (“the engineers, the agronomists, the professionals [...] [do not] want to listen to [the small farmers]”). This indicates that if family and community knowledge chains are broken and extension projects led by these ‘professionals’ become the dominant way of disseminating agricultural knowledge, they will likely not be sharing the traditional knowledge of Andean farmers, but their own produced ‘expert’ knowledge. Therefore, in the face of rural-urban migration, it is possible that agricultural, environmental, and cultural knowledge can be lost.

The Role of EcoHuella in Combatting These Challenges

There has been not only a shift to valuing formal education, but a shift to valuing vertical transfers of knowledge and ‘technicians,’ neither of which bode well for traditional agricultural knowledge and practices in Peru. EcoHuella challenges this by being more than just a farmer training program, but a hub where farmers can share knowledge and collaborate. Of course, this is not the same as family knowledge sharing, but it is a way to preserve a similar knowledge sharing system, one that does not impose knowledge from outsiders but supports farmers to share knowledge amongst themselves. The word ‘preserve’ here is used cautiously- it is not the intent of the Andean Alliance to enforce any particular way to be a farmer, but to help farmers pursue agriculture as they will. This could be to use traditional knowledge and practices, so part of the effort will be to uphold that knowledge and make it available, but it could mean letting Andean agriculture evolve as farmers choose to grow new things and to respond to market opportunities. The future of smallholder agriculture and EcoHuella’s vision for liberation depends on this delicate balance of support and autonomy.

If the future of smallholder agriculture is threatened by better opportunities in cities, then there need to be better opportunities in agriculture. The presence of more economic opportunities can change the perception of agriculture as backwards and non-profitable, and instead be seen as a viable pathway for development and stability. On a personal level, market access can increase income as well as farmer self-esteem and autonomy- and vice versa, supporting farmer

self-esteem and autonomy are necessary to help access those market opportunities in the first place. Therefore, although it could be true that the question of the decline of smallholder agriculture is more a question of social stigma than actual lack of opportunities (which is debatable), market opportunities are still intertwined with this deeper social issue and can be a tool for social betterment and farmer liberation in this aspect.

Conclusion

This paper argues that market access can be a tool for promoting the liberation of smallholder farmers in the Peruvian Andes. As has been discussed above, these farmers have experienced challenges with regards to their economic situation, the state of the environment, public health, the devaluation of traditional knowledge, loss of cultural heritage, and stigmatization of farming in Peru in the face of urban growth. Restaurant interviews and consumer surveys conducted in the summer of 2018 identified a demand for organic and local products in Cusco and the Sacred Valley, particularly within the tourist sector. Small farmers have expressed in interviews that they believe market access could incentivize the use of environmental and health-conscious growing practices, such as agroecological techniques.

Therefore, this paper suggests that facilitating connections between farmers and this identified consumer demand could serve to promote the liberation of farmers – allowing them to use the methods they wish and giving value to their experience-based knowledge. Market access for farmers who use traditional and agroecological methods would have widespread benefits for human health, the environment, cultural heritage, and local perceptions of farming. Importantly, there must be a direct connection between producers and restaurants such that market access can enhance the self-esteem and promote the autonomy of producers. For EcoHuella, the Andean Alliance demonstration farm, this form of market access fits within their vision of farmer liberation. EcoHuella offers workshops and trainings which involve horizontal knowledge transfer in which farmers share techniques and collectively enhance their self-esteem and agency. This vision of liberation resonates with the global movement of food sovereignty, which argues that farmers should be able to make culturally-appropriate and sustainable decisions for

food production in their communities. In the Peruvian Andes, market access could provide a means for incentivizing these decisions. More broadly, it could support smallholder agriculture as economically and socially viable despite the many challenges discussed above. There are certainly limitations and risks associated with a market-based solution; however, market access has the power to promote the autonomy of farmers and the value of their experience-based knowledge, contributing to the overall vision of farmer liberation for the region.

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Interview Key:

Carmela (Cynthia), interview, July 13, 2018.

Julio Nina (Ricardo), interview, June 12, 2018.

Juan (Hugo), interview, June 13, 2018.

Liz Galiano Rampas (Juanita), interview, July 10, 2018.

Yessica Nina (Veronica), interview,

Appendix--Consumer Survey Results

1. Introduction:

An investigation of consumer preferences regarding organic produce and certification as well as an individual's likelihood for supporting small-scale and local farmers was conducted in the Cusco region. An individual's preferences can influence his or her attitudes and ultimately, his or her behaviors (Anojan & Subaskaran, 2015). While on vacation, the same decision-making process applies, where "decisions are thought to follow a sequence of attitude to intention to behavior," (Decrop, 2010). The goal of this survey was to gather information on how people (primarily tourists visiting Peru for vacation) seek out information on their food choices, what they value in where and how their food is sourced, and how willing they are to support small-scale, local, and/or organic farmers while on their travels. With this information, we can identify what motivates people in terms of buying decisions and restaurant choice. It is our hope, that by passing along this information to small-scale, local, and/or organic farmers, they can better market themselves to restaurants and consumers to increase their economic opportunities.

2. Methods/Techniques

The survey was administered by undergraduate and graduate students working for the Andean Alliance for Sustainable Development from July 16th to July 26th of 2018. The survey sample population was chosen at random by pairs (and one group of three) of students as well as staff members of the organization. The primary target audience was international and domestic tourists in the Cusco Region. Surveys were given orally in English, Spanish, and Chinese and recorded on paper. Pairs divided up into a main speaker and a data recorder, switching roles when desired. Many of the participants were shown the survey in order to see the various suggested options, though they did not fill it out themselves (Attached is an example of the survey administered as well as sample answer sheet). The cities chosen for the study were: Calca, Pisac, Ollantaytambo, and Cusco. Subjects were given a AASD business card with contact information and encouraged to visit the website. Demographic information was also collected.

3. Description of Questions

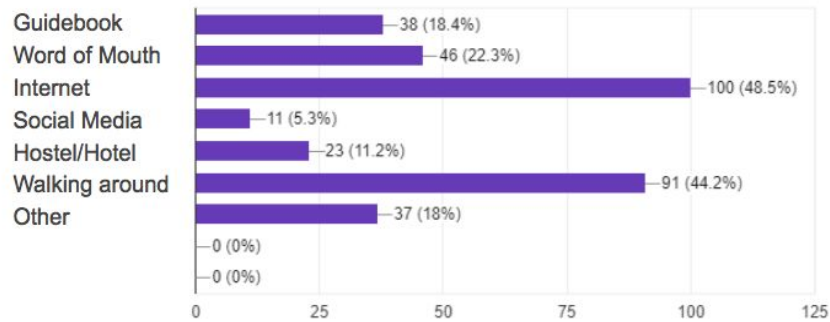
There were twelve questions in total on this consumer survey, three of which were demographic questions about age, gender, and nationality. The first two questions were targeted at consumer attitudes regarding restaurant choice in Cusco, consisting of six suggested answers for question 1, while question 2 had 10 suggested answers. Questions 3 and 4 were both done on a scale of 1 (highly unlikely) to 5 (highly likely); addressing consumers' willingness to pay more for restaurants that source organic produce and restaurants that support small-scale local farmers (under the assumption that those two may or may not be the same). Question 5 inquired about what information consumers would like to know regarding where their food is coming from; it had six suggested options. Question six asked how consumers would like to receive the information they desired (taken from question 5); it consisted of six suggested answers. Question 7 was written with the purpose of measuring how frequently consumers are visiting restaurants that offer organic produce, restaurants that support local farmers, and restaurants that support small-scale farmers (under the assumption that restaurants may or may not fall under one or more of these labels). Question 8 was a simple yes or no question addressing whether consumers thought organic produce should be certified. Questions 1-8 included additional options such as "other", "none of the above", "don't know" and "prefer not to answer". At the end of the survey, participants were asked about their reasons for visiting Peru in order to confirm their status as tourists. Of the 206 survey responses taken, participants gave varying responses on each survey. The trends that rose out of said responses, both positive and negative, will be discussed in the following section.

4. Summary and Interpretation of Data

Question 1: When conducting preliminary searches for restaurants, 48.5% of participants use the internet as their primary source. Many mentioned using the website and/or application TripAdvisor, which gives reviews and ratings of restaurants in the surrounding area. 44.2% of participants said alternatively or in addition that they chose restaurants simply by walking around Cusco. Of the six suggested answers given in question one, social media had the lowest response rate (5.3%).

How do you find out information about a restaurant (Sacred Valley, Cusco)?

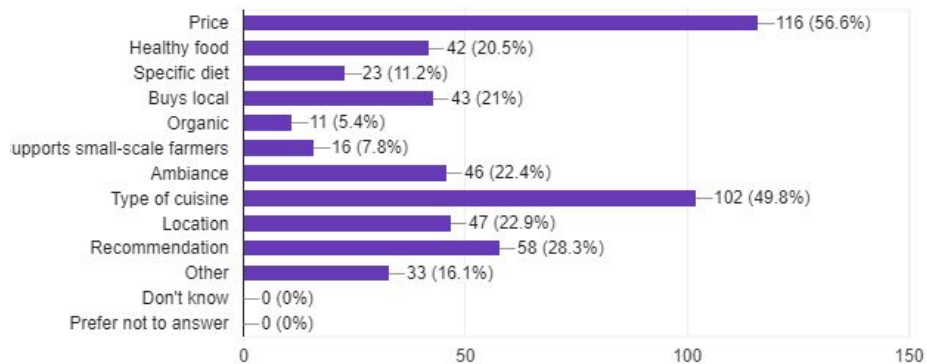
206 responses



Question 2: This question sought specific factors for individuals' restaurant choice, with the ability to choose more than one factor. The top answer, out of the ten suggested, was price with 116 (56.6%) participants electing it as their deciding factor in picking restaurants. "Type of cuisine" came in a close second, chosen by 49.8% of participants, while recommendations was chosen by 28.3% of participants. The three lowest factors were as follows: specific diet (11.2%), supports small-scale farmers (7.8%), and organic (5.4%).

Which factors influence your decision the most in picking a restaurant? (the three most important)?

205 responses

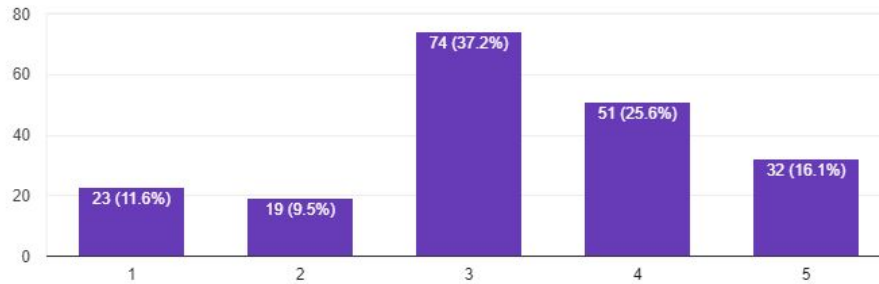


Question 3: 37.2% of participants chose "3" on a scale of 1 to 5, stating they would be willing to pay more for a restaurant that sources organic produce. The scale was only loosely defined, so the rating of "3" could mean various things, such as that they would not pay more for organic or they would only pay a little more. However, we can be certain that they would not want to pay less than normal if the restaurant sourced organic. 25.6% of participants chose a "4" rating and 16.1% chose a "5" rating, meaning they would pay more for a restaurant that sources organic

produce. The participants that chose a rating of “1” (11.6%) and “2” (9.5%) were not willing to pay more for organic produce, or if so, only a very small increase in price.

How willing are you to pay more for a restaurant that sources organic produce:

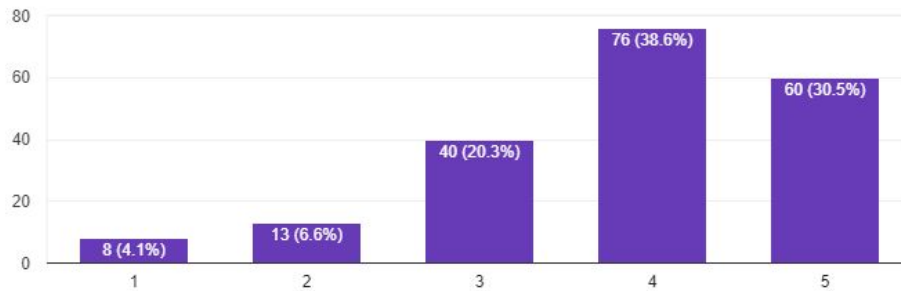
199 responses



Question 4: The responses for this question show that customers are much more willing to pay for restaurants that support local small-scale farmers in contrast to organic. 38.6% chose a rating of “4”, 30.5% chose a rating of “5”, and 20.3% chose a rating of “3”. It is not possible to determine from the questions how much more they are willing to pay for this type of restaurant.

How willing are you to pay more for a restaurant that supports small-scale local farmers:

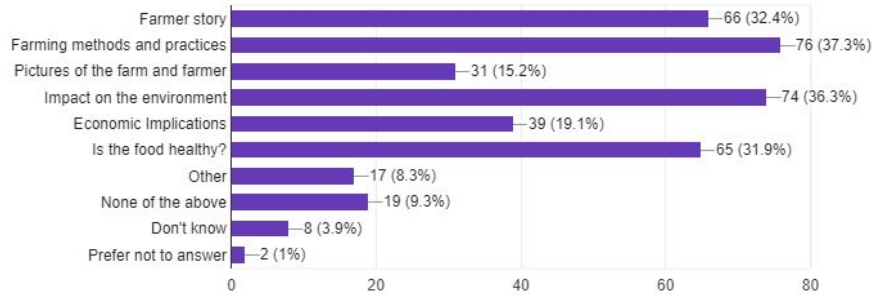
197 responses



Question 5: Farming methods and practices (37.3%), impact on the environment (36.3%), and the farmer’s story (32.3%) were the top three themes people wanted to know regarding their food source. Individuals were not as interested in pictures of the farm and farmer (15.2%).

What information would you like to know about where your food comes from? (check all that apply)

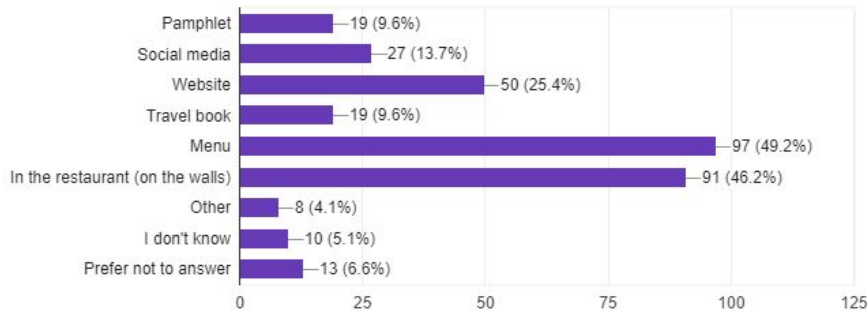
204 responses



Question 6: In regards to the manner of receiving this information, people wanted to have the information displayed on the menu (49.2%) and in the restaurant (46.2%). Very few people wanted to receive the information via social media (13.7%), travel book (9.6%), or pamphlet (9.6%).

How would you like to receive information? Check all that apply:

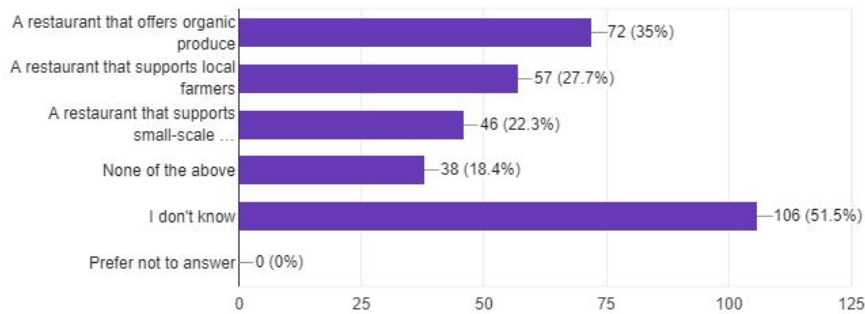
197 responses



Question 7: Over half (51.5%) of the individuals surveyed did not know, in the past week, whether they had eaten at a restaurant that sourced organic produce, supported local farmers, or supported small-scale farmers. 35% of individuals stated that they had eaten at a restaurant that sourced organic produce, but many people voiced uncertainty in whether the produce was organic or simply “thought” the produce was organic and trusted what the restaurant stated as organic.

In the past week, have you eaten at: (check all that apply)*ask if it is the same restaurant

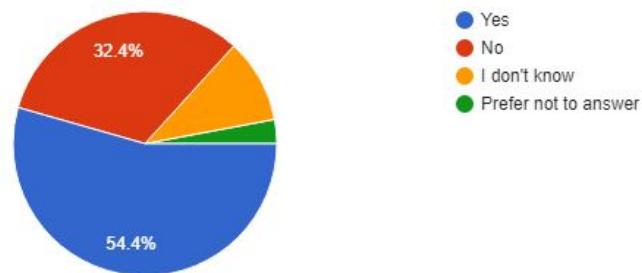
206 responses



Question 8: The majority of individuals stated that it is important to them that organic produce is certified (54.4%). 35% of those who responded stated that organic certification was not important to them, either because the certification was “not trustworthy”, “the personal story and farmer’s life is more important than certification”, or that they were simply not sure about certification standards in Peru. 10.3% of respondents did not know whether certification of produce was important to them. Several people stated that “they think about organic food and certifications at home, but not while traveling” or “they care about organic, but do not actively search for it”.

Is it important to you that organic produce is certified?

204 responses



5. Demographics

Are you:	N	Respondents (%)
Male	84	40.8%

Female	102	49.5%
Prefer not to say / Inconclusive	20	9.2%
What is your age group?	N	Respondents (%)
18-25	63	30.9%
26-44	86	42.2%
45-64	38	18.6%
65- over	12	5.9%
Prefer not to say	5	2.5%
What is your nationality?	N	Respondents (%)
United States	48	23.3%
Peru	22	10.7%
Great Britain	21	10.2%
Argentina	16	7.8%
France	13	6.3%
Other	90	43.7%
(Continent)	N	Respondents (%)
<i>Europe</i>	82	40.3%
<i>North America</i>	57	28%
<i>South America</i>	57	28%
<i>Australia</i>	7	3.4%
<i>Asia</i>	3	1.5%

6. Conclusion

After compiling and analyzing the data from this survey, it was found that consumer preferences tended towards supporting small-scale and local farmers rather than food labeled as “organic”. In terms of their food choices, respondents stated they were much more likely to pay more for restaurants that supported small-scale local farmers than restaurants that offered organic produce. Many people placed emphasis on the “cleanliness” of the food and making sure they were visiting a restaurant with “healthy produce”. If individuals did choose to eat organic or local, they tended to want a “guarantee” that the produce was actually organic or sourced from a

local farmer, especially if they were paying more for the product. While individuals surveyed stated they were more likely to want local produce, they were often unsure of where to find restaurants that offered local produce and/or supported small-scale farmers. Individuals responded that there should be more advertising in the restaurants regarding where the food was sourced. Often, people made a distinction between their food choices at home versus abroad, stating that when they are on vacation, they were less likely to be concerned with where their food is sourced.

In moving forward, we recommend that both farmers and restaurants invest in more advertising, such as signage outside of restaurants and inserts in menus. They should emphasise the aspects of their farm/produce that support a local narrative, their ties to the sacred valley, the history of their family in the region, heirloom varieties of plants and native plants to the Andean region that they grow, etc. Restaurants should also do more advertising of the “cleanliness” of their food, which could be as simple as a sentence in the menu saying “all produce was washed in filtered water,” or perhaps health inspector certifications posted on the walls. Restaurants do not need to focus as much on advertising their food as “organic”, as it is not a term that the average tourist is responding to positively. In fact, the majority of tourists who cared about the organic label also wanted it to be certified, which is not something the majority of farmers have. Rather than having to deal with circumventing the certification questions, farmers and restaurants should use other labels for their produce (i.e. ecological, environment-friendly, etc.). Information given in menu inserts and other marketing materials should highlight the farmer’s story, their methods and practices, and their impact on the environment.

7. Further Research

For others interested in this topic, we advise conducting additional research on certifications, specifically on what certifications mean to consumers, how that meaning changes depending on nationality, and in particular, whether consumers equate certified produce with “healthy” or “clean” produce. It would be useful to understand whether individuals are actually seeking organic certification or a simply a “guarantee” or trust that the produce is good quality. Further research could also look into the distinctions people make in food choices when at home

and abroad. It would be helpful to investigate the reasons behind traveler's choices and if this is an area in which individuals behaviors can be modified.

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