Increasing Community Engagement in the Sayausi Seed Bank

An Interactive Qualifying Project
submitted to the Faculty of
WORCESTER POLYTECHNIC INSTITUTE
in partial fulfilment of the requirements for the
degree of Bachelor of Science

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Date:
March 2nd, 2023

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1. Introduction

The variety of plant life on the planet is in decline and it is understood this can lead to great famine. As seen in the mid-20th century, the Panama Disease devastated banana plantations across Latin America and the entire species was put at risk of extinction (Ordonez et al., 2015). Any one disease can wipe out these popular grocery store items in the blink of an eye. The United Nations reports that over 90% of crop varieties have disappeared from farmers' fields. With this decline, agro-biodiversity is disappearing. Home to the Andean Highlands, Ecuador is recognized by the Food and Agriculture Organization of the United Nations as one of the 17 megadiverse countries in the world (Castillo et al., 2017). A great variety of native crops remain present in Ecuador thanks to the traditional agricultural practices by indigenous communities. However, climate change and the rise in global sea levels threaten these biodiverse ecosystems and the indigenous communities who call them home.

Modern industrial agriculture practices, driven by a growing worldwide population and changing consumption patterns, are the greatest contributor to biodiversity loss and climate change. The global food system has brought many crops to near extinction (Shivanna, 2020). In particular, hybridized varieties from technological advancements are replacing native varieties and causing genetic swamping, low levels of gene flow caused by invasive plant species (Kottler, 2021). Therefore, there is an increasing need for countries and organizations to prioritize curbing biodiversity loss in all forms of life to maintain Earth's resources for future generations.

Seed banks have become one of the most successful methods of preserving biodiversity. They act as a reservoir for seed storage and serve as a protective measure in keeping species from extinction (Lennon et al., 2021). They range in size from global to small-scale seed banks. Community seed banks are locally managed and are a collective initiative by community members to maintain seeds for local use. Community seed banks handle both major and minor crops, including neglected and underused seed varieties, allowing for increased accessibility to these.

Indigenous communities respect and value the environment, and practice traditional farming as a part of their sustainable management of natural resources and integration of their traditional knowledge. Traditional ways of agriculture promote biodiversity and place an emphasis on the cultural appreciation for certain crops. A great variety of native crops remain present in Ecuador thanks to the traditional agricultural practices by indigenous communities. However, these biodiverse ecosystems and the indigenous communities who call these areas home are threatened by climate change and the rise in global sea levels.

There are activists that are seeking to help farmers and communities regain and maintain control over the seeds they use by connecting communities to develop systems of seed preservation. Marisol Peñaloza, councilwoman and activist, aims to do this in Sayausi, Ecuador. Sayausi is one of the largest of 21 parishes in the Cuenca canton. These parishes practice

traditional agriculture and subsistence farming to maintain their livelihoods. One way Sayausi utilizes its resources is through its seed bank, which has not been recently prioritized. Through promoting the Sayausi seed bank, our team aims to increase community engagement with the seed bank by assessing interest and conducting a needs assessment, determining opportunities for community engagement, and developing a structured feedback mechanism to gather community input. By emphasizing the cultural and practical importance of the seed bank through this process, we hope to revitalize it for the community to access for coming years. In order to conduct this research the team investigated a variety of topics including seeds banks, agriculture, and community engagement.

2. Background

According to the Food and Agriculture Organization (FAO), about 75% of crop genetic diversity has been lost in the last century. This is due to farmers worldwide transitioning to more genetically uniform and higher-yielding crop varieties while abandoning local species (McNally, 2013). Climate change and other human-centric forms of biomass degradation make it necessary to preserve remaining plant life, which make up 80% of all biomass (Bar-On, 2018). Plants are essential to the human diet as they account for over 80% of what we consume and just 30 varieties account for 95% of human food energy needs (McNally, 2013). As the world transitions into more advanced technological methods of farming, heirlooms, otherwise known as seeds from traditional agricultural varieties are put at higher risk of extinction due to this type of commercial agriculture (Wight, 2020). Without heirlooms, seed lineages risk extinction.

2.1 Seed Banks

One preservation method is through seed banks. Seed banks exist in many different forms and function as a space for seed storage to preserve their genetic diversity and maintain the cultural heritage of different groups across the world. They act as a catalog to map the agricultural evolution for their regional locations (Tanksley and McCouch, 1997). On an ecological timescale, they represent 'biodiversity reservoirs' and have a positive impact on local population persistence and biodiversity preservation (Vandvik et al., 2015). Without these seeds, Earth would not have the vast amount of genetic diversity it has today and agricultural practices would be non-existent.

Seed Bank Classification

Seed banks can be classified based on their type of conservation. Ex-situ conservation is the "conservation of selected plants and animals in selected areas outside their natural habitat" and "involves the transfer of genetic material away from the location where it is found" (Jainsakar et al., 2018). Conversely, in-situ conservation is as "the conservation of species in their natural habitat or natural ecosystem," and "in the process, the natural surrounding or ecosystem is protected and maintained so that all the constituent species (known or unknown) are conserved and benefited" (Maxted, 2013). Most seed banks fall under ex-situ conservation as growers physically move seeds from their natural habitat to a storage site and stored in areas far from where they originate as well. For seeds specifically, ex-situ conservation is a more convenient, cost-effective, and wider used method of conservation (Malhotra et al., 2019).

Once seeds are added to a bank, growers characterize each species by factors such as the length of their storage times. The three main categories for determining their storage lengths are

transient, short-term persistent, and long-term persistent. Table 1 illustrates the three categories and their respective storage lengths. Transient seeds are species that can survive in the soil for less than one year, short-term persistent for between one to five years, and long-term persistent for at least five years. Long-term persistent seeds are unique in that they are likely to help regenerate destroyed plant communities in the framework of restoration ecology (Bakker, 1996).

Table 2.1

Seed storage classification and their respective storage lengths

Storage Category	**Storage Length**
Transient	<1 year
Short-term persistent	1-5 years
Long-term persistent	>5 years

In addition, seed banks also vary in factors such as size, shape, and location. For example, the Svalbard Global Seed Vault (see Figure 2.1) is a storage facility which acts as both a seed bank and genebank. Built in 2008 in Svalbard, Norway the vault currently houses over 1 million samples and has the capacity to store 4.5 million varieties of crops. It is part of a global effort to preserve crop diversity for future generations and houses over 5,000 different species (Asdal & Guarino, 2018). While this seed bank operates on a large scale, others are smaller, more local, and traditional.

Figure 2.1

Global Seed Vault in Svalbard, Norway

Note. From *Inside the 'Doomsday' Vault,* J. Duggan, 2018 (https://time.com/doomsday-vault/)

Seed Banks and Fostering Culture

Seed banks are important for keeping the cultural heritage and traditions of indigenous groups alive (Swiderska and Argumedo, 2022). Many members of the Cherokee Nation cultivate traditional crops and have been formally practicing seed conservation for almost two decades. (Wight, 2020). The Cherokee Nation Seed Bank is a cultural preservation program dedicated to storing these traditional seed varieties. According to Pat Gwin, senior director of the Cherokee Nation's Environmental Resources Group, the seed bank preserves over 100 different types of seeds and as of 2019, distributed around 10,000 seed packages to growers in the US (Wight, 2020). The program was started in 2006 and inspired by the Svalbard Seed Vault. At the time, seed conservation was not as mainstream as it is today. Many of the seeds within the program are multipurpose and used ceremonially, for crafts and sustenance. These seeds include the "Trail of Tears" bean and dent corn also known as the Cherokee White Eagle (Wight, 2020). For Cherokees across the US, the seeds serve as a connection to their culture and provide a source of comfort through their planting.

Another example is the *Quachuu Aloom* seed bank in Guatemala (see Figure 2.2.). *Quachuu Aloom*, which translates to Mother Earth, is an agricultural development non-governmental organization (NGO) that aims to improve farmers' traditional and agroecological farming practices while helping to preserve native seeds. It accomplishes this by providing the raw materials for this process and for the circular gardens and raised beds at their main seed farm outside of Rabinal, Guatemala (Wight, 2020). The seed bank involves around 500 active members, and 80% are women. Similar to the Cherokee Nation seed bank, *Quachuu Aloom* enforces and sustains cultural practices that large-scale banks such as Svalbard Seed Vault cannot provide. They aid farmers and community members by providing traditional varieties to sustain their families and serve as the glue holding these indigenous groups together (Wight, 2020).

Figure 2.2

Quachuu Aloom Seed Bank

Note. The seed bank holds seeds from indigenous families throughout the Baja Verapaz region of Guatemala. (Wight, 2020)

2.2 Seed Banks and Agriculture

Indigenous culture has long influenced traditional agricultural practices; adapted from Latin Americans' Worldview, which refers to a civilizations' accumulated knowledge about the ecosystem and climate in which they live in (Parraguez-Vergara et al., 2018). Worldview knowledge has a direct correlation to a civilization's belief system and consequently shapes their Belief Knowledge. Latin-American countries, such as Chile, Guatemala, Peru, Mexico and Ecuador continue to practice Belief Knowledge in the twenty-first century (Parraguez-Vergara et al., 2018). Table 2.2 displays the Worldview considerations that Latin American countries apply and value in their agricultural practices.

Table 2.2

Traditional Practices according to context of study in Latin America

Rural Livelihoods	General Considerations	Practices	Chile	Peru	Ecuador	Colombia	Guatemala	Mexico Totonacas Papantla	Mexico Mayas Yucatan
Cultural practices and values	Worldview	Season	X	X	X	X	X	X	X
		Lunar phase	X	X	X	X	X		
		Month	X	X	X	X	X	X	X
		Time of the day	X	X			X	X	X
		Emotional state	X	X	X		X		
		Woman			X		X	X	X
		Offerings to nature	X	X	X		X	X	X

Note. (Parraguez-Vergara, 2018)

Indigenous communities practice traditional processes directly related to their connection to the Earth, including making offerings to Nature and Gods, as well as planting seeds at specific phases of the lunar cycle. In order to help predict the success of a harvest, farmers take into account the time of day, their emotional state while farming, and a woman's fertility phase. An Andean case study shows that a community's culture plays a key role in fostering agro-biodiversity, a subset of general biodiversity pertaining to agriculture (Skarbø, 2014). Agricultural communities that strongly identify with their local indigenous cultural traditions, as well as those who practice subsistence farming, grow the most diverse crop fields (Skarbø, 2014). Indigenous families who prepare and consume traditional foods tend to lean towards growing a larger variety of crops due to their dependency on their own crop production (Amaya-Castellanos et al., 2022). This highlights the importance of appreciation for cultural and

agricultural heritage, as these are pivotal factors for the conservation and cultivation of agro-biodiversity in an area.

However, Latin-American countries experiencing a decline of indigenous people are experiencing a loss of traditional knowledge and agricultural practices. As of 2018, Colombia reported having 35 ethnic groups out of 102 surviving groups (Parraguez-Vergara et al., 2018). The decreased consumption of ancestral foods in these communities has been fueled by the exhaustion of natural resources, the replacement of native crops by commercial ones, and changes in farming practices led to changes in ancestral food practices practiced by indigenous communities in Colombia (Amaya-Castellanos et al., 2022). Their diminishing indigenous population has negatively affected the preservation of Belief Knowledge, and has led to a loss of traditional practices associated with food production (Parraguez-Vergara et al., 2018).

Reports show that problems with food insecurity, and malnutrition, including undernutrition and obesity, are greater for indigenous populations compared to non-indigenous populations (Coimbra, 2014). According to a Colombian governmental survey assessing national nutrition levels, it was reported that 77% of Indigenous households in Colombia experience food insecurity, in comparison to the 52.3% experienced within the general population (Amaya-Castellanos et al., 2022).

Food practices have significantly changed for Indigenous groups in both lower and higher income countries. For instance, some Indigenous children in Canada have been found to consume fast food and processed foods at least once per week, and roughly half consume candy, desserts and packaged foods with high salt contents at least once per day (Kuhnlein et al., 2006). Over time, there has been a decrease in the consumption of ancestral foods (Amaya-Castellanos et al., 2022). The preparation of ancestral foods requires inherited knowledge and in turn contributes to cultural identity (Amaya-Castellanos et al., 2022). Government programs have promoted new foods that compete with traditional ones, with no usage of an intercultural approach (Amaya-Castellanos et al., 2022). With local governments supporting programs incentivizing commercial monocultures, the damage done increases, as indigenous communities shift to different agricultural practices and in turn forget their own (Parraguez-Vergara et al., 2018). The lack of importance and disregard from the government towards traditional agricultural systems has negatively affected communities.

Given the reality of these communities, an attempt should be made to complement ancestral diets with foods from other contexts but with nutritional value, and consider using modern practices to facilitate the preparation of traditional foods (Amaya-Castellanos et al., 2022). Local governments and nonprofit organizations (NGOs) can instead help positively transform and commercialize local agricultural production, as they are influential voices for indigenous communities. Rather than dismissing traditions, they can blend the modern agricultural system and indigenous traditional agriculture to build off each other. As a direct effect of NGOs and governments providing training to teach methods of increasing crop production, indigenous farmers have begun to incorporate modern technologies to their

traditional agricultural practices such as water management and soil fertilization techniques, in order to further the conservation of local species and varieties (Parraguez-Vergara et al., 2018) .

Rural communities have started to reconstruct, and expand their own community networks in order to facilitate seed exchanges (Borja et al., 2016). Seed exchanges are events in which people gather to share seeds. The seeds exchanged include locally saved seeds, excess seeds, or even some from other regions. In countries like Chile they have market days referred to as *trafkintu*, in which producers exchange seeds. However, these seed markets do not work efficiently as they do not adapt to local climate conditions (Parraguez-Vergara et al., 2018). Seed banks instead provide a stable storage location and access point for people to feasibly purchase local seeds.

2.3 Rural Community-Based Tourism and Engagement

One avenue of financial support for rural communities and by relation, seed banks, is the use of tourism. As Ecuador is a developing country, tourism is a major contribution to their GDP (Montoya et al., 2020). However, traditional forms of tourism are more applicable to larger cities rather than small town communities. The difference in the quality and quantity of rural and urban tourism has led to more creative and unique initiatives to promote and raise the economic standing of rural communities.

Community-Based Tourism

Initiatives and tactics developed to support rural communities are categorized as rural tourism which has become increasingly popular in developing countries due to the flexibility of the initiatives as well as their ability to provide jobs in unemployed areas and help diversify local businesses by making them more profitable (Yfantidou, Matarazzo, 2017). Smaller rural communities are in a unique position, in which they must work cooperatively to maximize their ability to attract tourists, this aspect of rural tourism is referred to as community-based tourism (CBT). CBT is a model of tourism which is characterized by local businesses supporting other local businesses, especially tour guides that recommend visiting a rural area or suggesting local stores (Ruiz-Ballesteros, 2011). Studies have linked CBT with creating a higher level of socio economic resilience (Ruiz-Ballesteros, 2011) which is “the capacity of a system to experience shocks while retaining essentially the same function, structure, feedback and therefore identity” (Walker et al., 2006). Researchers studied the town of Agua Blanca, Ecuador for their use of CBT and the effects that it had on the community (Ruiz-Ballesteros, 2011) and the study concluded that amongst other factors, the town’s proclivity towards working together and working on communal or tourism related projects had increased the town’s cohesion and trust amongst themselves. This enabled the townspeople to work together during times of crisis such as droughts, major weather issues, and social change on a high level. Moreover, having a culture

of CBT helped remind the community about their collective memories that were on the brink of being lost. This remembrance was largely due to tour guides telling the stories of Agua Blanca to tourists, as such the community began to remember aspects of their local culture that were almost lost.

Many of these smaller communities rely on farming as their primary source of income and use the existing farming infrastructure as a way to expand their appeal to tourists. This model of tourism is aptly named agrotourism as the aspects all relate to agriculture. Some examples of agritourism include farmer's markets, farm stays, pick-your-own operations, artisanal stores, horseback riding, and local traditional festivals to name a few. An agritourism model provides an economic boost to rural areas without a complete restructuring of the community, allowing for the community to retain members and promote their own culture and knowledge to people far from their area (Ariza-Velasco, Barreno-Silva, 2022).

Although no major research solidifies the effects seed banks have on rural and community-based tourism, it is often included within CBT efforts. One example of this is Turismo Joya Hermosa, a tourism-focused cooperative between three towns in Guatemala. The cooperative focuses on sustainable tourism using agritourism and offers guided tours to farms and artisanal businesses in the area. One of their major stops is the local seed bank with various varieties of different crops and a clonal garden with 52 varieties of potatoes which the seed bank maintains. While the effect of the seed bank is mostly secondhand it also has been shown to improve related indigenous knowledge and increase local biodiversity (Vernooy et al, 2017) which can have an effect on tourism which the Joya Hermosa cooperative shows.

Community Engagement

An important part of beginning community-based tourism is to analyze the current initiatives within the community that help promote members of the community to support local initiatives. However, a recurring problem that can pervade the promotion of these initiatives is the inability of the initiatives to affect change. One study discovered that providing information to a populace had a minimal effect on the actions of the studied populations (Howard, 2000). Part of this study included interviewing 500 participants on their personal responsibility regarding picking up litter, although 94% of the interviewees acknowledged their personal responsibility, only 2% picked up litter that the researcher planted (Howard, 2000). To counteract this problem, an alternative approach, community-based social marketing (CBSM), is a growing technique. CBSM is a model of promotion in which the promoter identifies barriers to their item of promotion and attempts to overcome the barriers through various means, especially using psychology (McKenzie-Mohr, 2000). The most important aspect of CBSM is the identification of barriers within the given community which organizations neglect due to time and monetary constraints. If given the proper time, less expensive alternatives can be pursued. Once a team has identified the barriers surrounding both the community and the initiative, they can form a plan that effectively overcomes the barriers. One method that has become popular in overcoming the barrier is to rely on the "foot-in-the-door-effect"(McKenzie-Mohr, 2000), this

effect states that one small initial request will make subsequent activity more likely to occur. The CBSM model aims to provide a solution to what is preventing community members from participating in community activities; however, a community must also be motivated to assist in those same community activities.

One existing method of motivating community engagement and action that already exists in Ecuador is the *minga* which is a cultural phenomenon present in Ecuador. The word *minga* is derived from the indigenous cultures of the region surrounding the Andes mountain range, in Kichiwa the original word is *mink'a* and translates to mean "request help promising something". A *minga*, in the present day, is a form of community or collective work that aims to improve the area for the common good (Torres et al., 2018). One example of the work and the motivation that a *minga* can inspire is the restoration of San Roque heritage buildings in the Cuenca Canton of Ecuador (Torres et al., 2018). The San Roque *minga* was a plan constructed by the Government of Cuenca and was a large collaboration with many different organizations. The main group that the *minga* was centered around was the community of San Roque however, since the restoration would require specialized work such as waste disposal and electrical work, government agencies were charged with assisting in the restoration. In addition, the University of Cuenca played a key role in organizing the different groups. As well as providing the funding for the project the government of Ecuador provided soldiers of the Ecuadorian armed forces to provide unskilled labor. Through this effort the historical buildings in San Roque were successfully restored and maintained with much more contribution from the community than the University had expected. The effectiveness shown by the use of the *minga* in Cuenca in recent history has solidified it as a new method of governance in the region (Torres et al., 2018). Due to the team's limited knowledge concerning the specifics of the seed bank, it is unclear if the seed bank can be converted to a completely community based effort, however, using aspects of the *minga* culture may improve community engagement with the seed bank.

2.4 Seed Banks in Latin America and Our Project

The Features of a Successful Seed Bank

Danilo Fino carried out a research study to design a viable community seed bank in the town of Ubaque in Colombia. Beyond a successful design, he aimed to benefit the local community and further the sustainable development of the town as a response to the declining biodiversity and food sovereignty (Fino, 2014). He gives a detailed guide with steps to follow in order to establish the seed bank, ensuring careful collection of the seeds in order to protect the biodiversity of the area. It is necessary to begin by demonstrating to government officials, and community members and leaders, the benefits of establishing a seed bank in comparison to the current practices in place. In order to gain support and engagement from these groups, the potential positive impacts a seed bank can have on the local environment must be highlighted.

Community members must support the establishment of the seed bank, to secure a promising future for it.

To launch this initiative into action, the seed bank needs participation from the groups mentioned above. Input from farmers is needed to gather information concerning current experiences and difficulties in agriculture. Community members with expressed interest in the seed bank can participate by becoming coordinators that help manage the preservation and the exchange of the seeds in the seed bank, or become beneficiaries. The seed bank can supply beneficiaries with a fixed amount of seeds each harvest season. The beneficiary will sow the seeds in a timely manner so that the seeds do not lose their vitality, and after the harvest the beneficiary will return to the bank double what they initially requested. The bank must have a sufficient amount of seeds stored in order to satisfy a certain number of beneficiaries as the bank grows. Community members involved with the seed bank are also encouraged to attend seed exchanges in order to share and exchange seeds, knowledge, traditions, ways to preserve, conserve, and strengthen ties with other communities, so that networks of seed banks and seed exchanges are furthered.

When determining the seed varieties of interest to include in the seed bank, the opinions of locals and farmers must be taken into consideration. The seeds collected must be at the best possible state, and therefore not infected with fungi or bacteria, as well as looking physically healthy in appearance. The seeds must also be collected from the best batch of the crop, for example the plant that bears the most fruits. These conditions will ensure that the seeds last up to a year or more. Beyond this, the seeds must be representative of the local biodiversity, and be important to the culture of Sayausi.

A meeting must be held with local government officials, and NGO's, locals and farmers interested in the project. During this meeting topics of discussions include: benefits to forming the seed bank, community member involvement, and seed varieties of interest. Following this, the initial acquisition of native seeds from the area will begin, keeping in mind the proper methods of collection and methods of distribution that will lead to a multiplication of seeds. It is important to remember that the seed bank is a community initiative in which community ties are strengthened, and knowledge and traditions are shared in respect to agricultural practices favoring conservation.

Quito, Ecuador Seed Bank

Local farmers have historically played a key role in the conservation of traditional seeds from staple crops, along with preserving the knowledge of how to use them. In Ecuador, local farmers provide 70% of the country's staple foods, despite only owning 20% of the agricultural resources available (Borja et al., 2016). With modern agricultural practices pushing for monocultures, Ecuador's farmers continue to self-organize as their network encompasses traditions and institutions that have resisted being influenced by external voices and agricultural practices. In the past decade, communities have worked towards establishing and expanding their own seed banks, which in turn has led to an expansive exchange of seeds and knowledge. For

each seed that farmers received from the seed bank, they then return two seeds after their harvest (Erazo, 2010). The seed bank then multiplies each variety and delivers it back to the community. By doing so, the seed bank not only protects local seed varieties but also generates products for continued circulation.

Figure 2.3

Worker in Quito, Ecuador Seed Bank

Note. From "Arca de Noé de semillas preserva biodiversidad en Ecuador," El Universo, 2011.

Currently in Quito, Ecuador, there exists el Banco de Germoplasma del Instituto Nacional de Investigaciones Agropecuarias (INIAP) (see Figure 2.3), which is a joint effort between Los Guardianes de las Semillas (RGS) and the Ecuadorian government. This national seed bank stores native seeds that greatly contribute to the agro-biodiversity of Ecuador. RGS, a nonprofit organization that focuses on seed collection and distribution, works to find and recover seed varieties to insert them back into Banco de Germoplasma. Meanwhile, scientists from INIAP research methods to improve these seed varieties. This seed bank houses a variety of grains and tubers, some of which have presented a risk of disappearing. El Banco de Germoplasma currently contains 20,000 ecotypes and 320 plant species, including all 25 maize varieties found in Ecuador (Erazo, 2010). The goal of this seed bank is to safeguard food sovereignty, as well as protect and conserve the country's genetic heritage.

Cuenca, Ecuador Seed Bank

Located in the Azuay Province (see Figure 2.4), in the city of Cuenca, Ecuador, la Casa de Semillas Nativas is a seed bank with the objective to rescue, conserve and preserve native seeds. The Association of Agroecological Producers of Azuay (APA Azuay), the Ministry of Agriculture and Livestock (MAG), and the Heifer Ecuador Foundation, inaugurated the first seed bank in the province. The APA Azuay association, which consists of 195 farmers from different

cities in the Azuay province, managed the collection of native seeds that are the heritage of the Azuay families. Currently, the seed bank contains 150 different crop varieties, thus becoming a reserve of genetic diversity that farmers can access through seed exchanges and seed multiplication (El Mercurio, 2021). In order to recognize the work of farmers participating with the seed bank and contributing to the country's food security, la Casa de Semillas has accredited participating farmers as producers of la Agricultura Familiar Campesina (El Mercurio, 2021). This title recognizes these farmers as accredited farmers who are active in rural areas, and allow for the possibility of branching out commercially.

Figure 2.4

Map of Azuay Province

Note. From "Tourist Attractions Map of Azuay, Ecuador" 2022.

Our Project

In Cuenca, Ecuador many of the rural parishes outside of the city also practice subsistence farming. Communities engage in rural agriculture, tourism, and cultural sustainability. In particular, Sayausí, one of the largest parishes in Canton Cuenca is involved in the above activities through their seed bank. The Sayausi seed bank sits inside Sisay Pacha, a local organic store. On top shelves lay glass jars with a variety of seeds from local produce from the region gathered through local farmers and seed exchanges. For the past two years, this project has been on standby and we hope to engage locals in participating with the seed bank to revitalize it, and make this a fruitful community-based collaboration. Through this seed bank, the community is able to practice agro-biodiversity and contribute seeds to support local farmers and families. By speaking to various stakeholder groups including locals, community leaders, government officials such as Marisol Peñaloza, and NGOs such as Cultivando el Futuro, we hope to gain community input for the project. This project aims to increase community engagement with the seed bank while promoting objectives such as cultural sustenance,

agricultural practices, and rural tourism. We will accomplish this alongside sponsor Marisol Peñaloza, a Cuenca councilwoman, and collaboration with Tania Guaján, the Sisay Pacha store owner.

3. Methods

The goal of this project is to increase community engagement with the Sayausi seed bank by cultivating interest and excitement towards the relationship with the seed bank, cultural identity, and local livelihoods. To achieve the project goal, the team developed three objectives:

1. Assess the current state of the seed bank and community interest in getting involved.
2. Determine opportunities for increased engagement with the seed bank.
3. Develop and get feedback on strategies to promote engagement.

This chapter describes the approach that the team will take towards obtaining information about the seed bank's state and community interest levels, opportunities for engagement, creating and receiving feedback on strategies, and achieving our three project objectives.

3.1 Objective 1: Assess the current state of the seed bank and community interest in getting involved.

The seed bank in Sayausi acts as not only a safe storage place for the parish's seeds but is also a cultural repository and resource to support the livelihoods of community members. Residents can bring in and take out seeds to grow for subsistence farming, healing practices, and ceremonial needs. Through understanding the current community interest and engagement with the local seed bank, the team can develop strategies for the local seed bank to promote the local traditional agricultural practices and heritage seeds of Sayausi. By making connections between the local culture and their traditional agriculture, the team will be able to help amplify the seed bank's cultural and economic influence in the community.

3.1.1: Semi-structured interviews

To gauge possible methods of community engagement with the seed bank, the team must first understand the current state of the seed bank, and the involvement of community members in the parish. In order to better understand the seed bank, in terms of its seed preservation, suppliers, and community participation, we will hold an interview with Tania Guaján, the owner of the organic store where the seed bank is located. Through the interview with Tania Guaján, the team seeks to gain an understanding of where the seed bank stands and determine possible areas in which community members can get involved. The full list of questions can be found in

Appendix D. We plan to photograph and record the seed bank to improve our understanding of its state. Additionally, the team plans to conduct semi-structured interviews with Sayausi locals and farmers, and indigenous leaders. Through interviews with Sayausi locals and farmers, the team hopes to gain insight into their current personal involvement in their community, as well as what would attract them to participate in a local seed bank. A full list of questions for Sayausi locals and farmers can be found in Appendix A and Appendix B, respectively. By interviewing taitas and mamas, locals who possess traditional knowledge, the team hopes to learn how these community leaders encourage locals to participate and engage in traditions, and local events. A full list of questions for indigenous leaders can be found in Appendix C. The team will schedule interviews at mutually agreed upon locations, and will take approximately 30 minutes. The team will ask permission to record the interviews, and take field notes of key points made during the interview. After concluding the interviews, the team will develop a formal interview write up, and will use specific quotes from the gathered recordings as supporting data. We will also code the interview with specific themes emerging from the data and conduct an analysis of these. The semi-structured nature of these interviews will facilitate a conversational exchange of information amongst different groups of people in Sayausi (Beebe, 2014).

3.1.2: Free Listing

In order to understand the current cultural relevance of the local seed bank, the team will utilize free listing, a data collection technique about a specific topic that involves asking people to list items they think of in relation to the topic (Flinn, 1998). The team plans on asking Sayausi locals in different age groups, ages 18 and up, to list the first five things that come to mind when they think about the Sayausi seed bank. The free listing prompt can be found in Appendix E. One of the locations the team will gather subjects from is Sisay Pacha, the local organic store where the seed bank is located inside of. As customers of Sisay Pacha, these subjects' responses will help the team see the awareness of the own store's customers. We will also look for subjects at local markets, and at the traditional festivals taking place in the parish. This will help the team understand the current local awareness of the seed bank, and see how locals perceive it in terms of its cultural importance. Additionally, we will look for subjects attending church on Sundays. The team hopes this location will give a broader perspective due to the large number of people that attend mass. If a subject does not know about the seed bank, we will also use that as data in order to scope the popularity of the seed bank amongst locals. With the data the team gathers we will be able assess the current situation of the seed bank, and identify areas of growth for the seed bank. We hope that by assessing these areas, the seed bank can be regarded by the Sayausi locals as a keeper of their culture and agricultural traditions. After the team finishes collecting data, we will utilize coding, which consists of categorizing the information gathered from data collection. Rather than focusing on the use of specific words, the team will focus on the connotation and meaning of the subject's responses while analyzing their findings and develop conclusions from these (Flinn, 1998). Through this method of organization, the team can then analyze word frequency, and common themes shared by subjects' responses. The team plans on

sorting through data using Excel, and visually present findings using a Venn Diagram. Through showcasing the data in the form of a Venn Diagram, the team hopes to demonstrate the similarities and differences between what the subjects responded to and paint a picture for how the people of Sayausi view the seed bank.

3.1.3: Observation

The Pawkar Raymi festival, a celebration for the gifts from Pachamama, mother nature, will be taking place on March 20th. The team plans to attend the event and observe and take note of the community participation that takes place at the festival. An example for note keeping can be found in Appendix F. The team also plans to attend similar festivals taking place in nearby parishes. At these festivals, the team will look at the involvement of the people volunteering, vendors, and customers. By doing this the team will get to see first hand the importance of mother nature, the influence of indigenous culture on the agricultural prosperity of Sayausi, local engagement, and how vendors are able to build a business around the festival. The team can compare the findings from the semi-structured interviews about Sayausi traditions and see how these are prevalent in the celebratory agricultural festivals that happen in the parish and areas nearby. This will significantly improve the methodological strength due to the relevancy of the cultural semi-structured interviews and the observations of the festivals (Beebe, 2014).

3.2 Objective 2: Determine opportunities for increased engagement with the seed bank.

Community members in Sayausi actively participate in events hosted by the parish, and are involved members of whatever groups they identify with. To better engage the Sayausi community with the seed bank, interacting with its members will help the group investigate what drives community involvement. This will allow us to establish more informed and appropriate methods to match the parish's needs.

3.2.1: Semi-Structured Interviews

The team plans to conduct semi-structured interviews with the local organic store and seed bank owners, local NGOs such as Cultivando el Futuro, and local business owners. We plan on asking our sponsor for the contacts of the Sisay Pacha organic store seed bank manager as well as the Cuenca seed bank manager, who will both be key informants (Beebe, 2014). We assume the Sisay Pacha owner, Tania Guaján, is knowledgeable about her store and the parish as she is a Sayausi resident. We will ask each manager questions focusing on how they engage the public running their seed banks, what strategies have and have not worked for them, and areas of improvement for their respective seed banks. The full list of questions can be found in Appendix G. The team plans on conducting these two interviews during the week of March 13th. They will last for approximately 30 minutes at Sisay Pacha and the Cuenca seed bank. We will ask for

informed consent before beginning as well as permission to record any footage for data analysis afterward. Similar to objective 1, we plan on taking photos of both establishments for documentation purposes. To analyze the datam the group plans to transcribe relevant parts of the recording and read through the field note taker's notes. The team will designate a note taker for the entirety of every interview in case our recording fails. We will rotate through the lead and field note taker for each interview throughout all three objectives. The team will use coding to determine common themes between each interview and identify relevant patterns in our interviewees' responses (Beebe, 2014). The group plans on taking taxis to each location and if the taxis cannot take us all the way to each interview location, we will walk. We will use the above process for all interviews under this objective. These two interviews will allow the group to understand and contextualize how other seed banks function based on their respective communities and how their managers have interacted with their community members.

The team will gather input from local NGOs to gain insight from organizations that have already been working alongside the parish. Their experience and knowledge about the community's history with engagement will give the group a valuable perspective to linking the seed bank with the local community. The group assumes these NGOs will have this insight as they operate directly in the parish and many of the members are Sayausi residents. We aim to ask Marisol for a member's contact to these organizations upon arrival to Cuenca. We also aim to interview members from three different NGOs working in Sayausi. The team plans to conduct the interviews in the parish but has not determined the exact location. After obtaining the interviewee's contact and scheduling the specific day, we will proceed with deciding the location. The full list of questions can be found in Appendix H and we plan on asking these contacts questions about areas in the seed bank they think can be improved upon and what kinds of engagement they have seen with it. By speaking to NGO members such as Cultivando el Futuro, we aim to ultimately gain knowledge about methods of community involvement through an NGO lens.

The final group the team will interview are small business owners in Sayausi. They may have valuable knowledge about community outreach techniques, ways they acquire and exchange seeds, and suggestions for the seed bank in Sayausi. The team is especially looking to gain insight on how these businesses are engaging with customers and attracting them to their establishments. We can then take their systems into consideration when producing our own strategies for the seed bank. We aim to identify and interview five owners selling agriculturally-related products and five owners selling seeds and or produce. The goal of the sample is to cover all business areas that may deal with seed sales. Depending on what store owners sell, there may be overlap between categories in which case they will count for both business types. The team will ask Marisol upon arriving to Ecuador for any owners she has contacts for and use snowball sampling to obtain interviewees. The team assumes Marisol will not provide contacts for all 10 of our interviewees so we will be visiting the weekend markets in Sayausi and the Pawkar Raymi

festival to identify the remaining interviewees. This allows for data saturation and a small enough scope to complete within the project's time constraints (Beebe, 2014). We will determine the exact location of each interview after getting into contact with each business owner. The full list of questions are located in Appendix I and the team will analyze results as discussed above. The group hopes to obtain information about how the owners advocate their businesses to community members and bring in customers.

3.3 Objective 3: Develop and get feedback on strategies to promote engagement.

When creating promotional material for an unfamiliar area, it is important to take into consideration the local use of promotion and the desired image of the entity being promoted. In order to get an accurate view of effective methods of promoting engagement that have been used or can be used we must obtain the opinions of local experts. It is also important to obtain the opinions of the target audience concerning the team's developed promotional material.

3.3.1: Semi-Structured Interview

The team will interview local experts specializing in the local economy, public relations or marketing to better inform the development of the team's possible promotional strategies. The interview will seek to collect information on the current promotional practices in the Cuenca area, the experts' recommendations and their opinions on the team's current plans, see Appendix H for full interview guide. The interview will take approximately 30 minutes and will be semi-structured to allow for more naturally flowing and flexible conversations (Beebe, 2014). The team will ask for the interviewee's permission to record and photograph the interview, any relevant portions of the interview will be transcribed. Due to the smaller size of the potential interviewees large scale analysis will not take place however, the experts thought will be compiled, compared against each other and implemented into proposed solutions.

3.3.2: Object Response

Prior to the start of second method two of the third objective, the team will assemble at least three methods of promoting engagement within the community, the created methods may include social media campaigns, logos or other promotional material. These methods will be constructed using the information and data collected from the previous methods and objectives. The team will then present their methods of promotion to members of the Sayausi community, who will be sampled through convenience sampling, and the data collection will take 10 minutes at most. The team will ask questions such as; What do you like about this [insert promotional material]?; What do you dislike about this [insert promotional material]?. This will be accomplished by asking passers-by in well traveled areas of the community such as the church, the market, and local festivals. After the team presents one of the promotional materials/plans to the community member, the team will ask several questions to gauge how the promotional

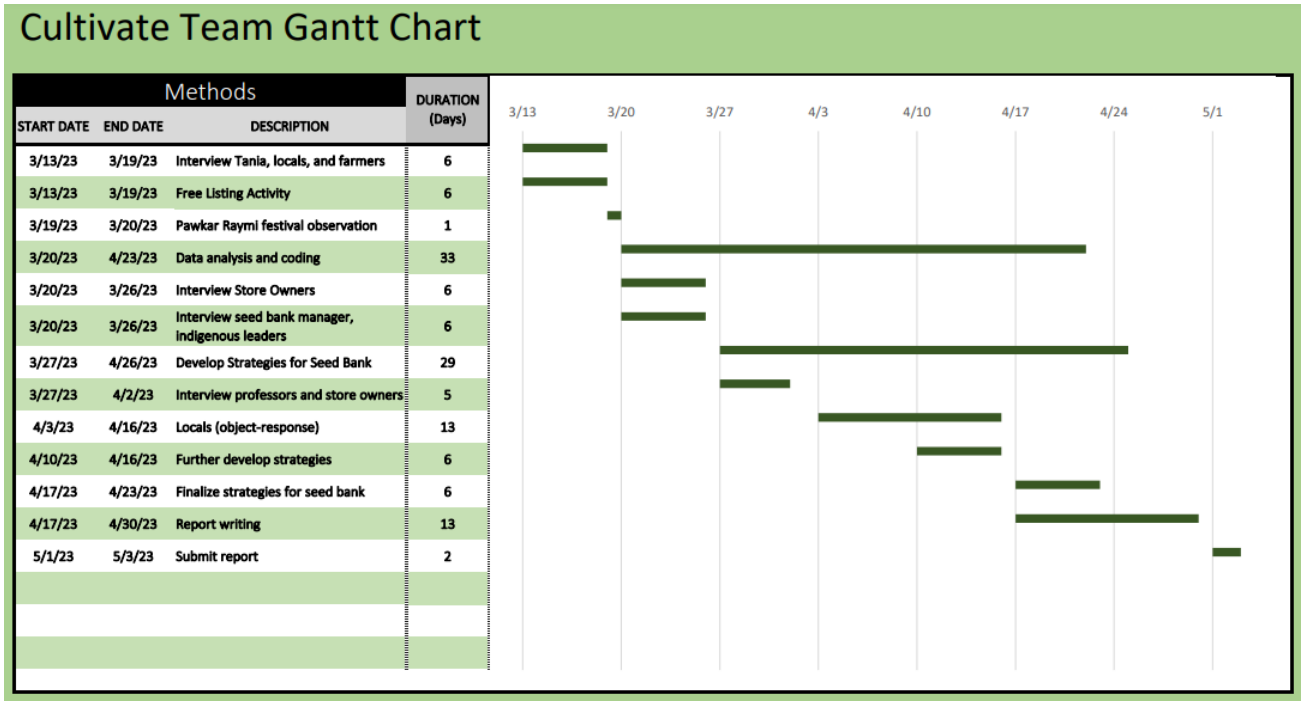
material affects the community member. Once the team has collected approximately 30 responses, the team will begin to process the data by using iterative coding (Beebe, 2014). Specifically, the team will code the data into preliminary categories; what was liked, what was disliked and what was missing; this will expand based on responses. The team will then use the processed data to improve or create new methods of promoting engagement for the Sayausi seed bank.

Conclusion

Using background topics discussed in the previous chapter in combination with our methods, the team aims to assess the seed bank's needs, obtain community input, and then construct engagement strategies to gain community involvement in Sayausi. The team will continuously develop and improve upon these strategies by receiving feedback from community members to create the best possible solution for the community. Refer to the Gantt Chart (Figure 2.5) below for how we anticipate to conduct each method throughout the seven week timeline.

Figure 2.5

The Cultivate Team's Gantt Chart



References

Amaya-Castellanos, C., Gamboa-Delgado, E. M., Santacruz-Chasoy, E., & Pelcastre-Villafuerte, B. E. (2022, July 30). *Loss of ancestral food practices and perception of its effect on children's health among Inga indigenous grandmothers, Nariño, Colombia*. BMC Public Health. Retrieved February 7, 2023, from https://www.ncbi.nlm.nih.gov/pmc/articles/PMC9338638/

Ariza-Velasco, A. A., Barreno-Silva, N. D. L. M., Feijóo-León, Á. D., & Serrano-Castillo, B. J. (2022). Agrotourism As A Modality Of Community Tourism In Joya Del Sacha, Orellana Ecuador. *Journal of Pharmaceutical Negative Results*, 5202-5212.

Asdal, Å., & Guarino, L. (2018). The Svalbard Global Seed Vault: 10 Years-1 Million Samples. *Biopreservation and biobanking*, 16(5), 391–392. https://doi.org/10.1089/bio.2018.0025

Bar-On, Y. M., Phillips, R., & Milo, R. (2018). The biomass distribution on Earth. Proceedings of the National Academy of Sciences, 115(25), 6506–6511. https://doi.org/10.1073/pnas.1711842115

Caradonna, J. L., & Apffel-Marglin, F. (2018). The regenerated chacra of the Kichwa-Lamistas: an alternative to permaculture? AlterNative: An International Journal of Indigenous Peoples, 14(1), 13–24. https://doi.org/10.1177/1177180117740708

Castillo, D. D., Carrasco, J. C., Quevedo, L. A., Ricaurte, C. B., Gavilanes, A. V., & S.A. Borz. (2017). Diversity, Composition and Structure of Andean High Forest in Ecuador, South America. *Bulletin of the Transilvania University of Brasov. Series II: Forestry • Wood Industry • Agricultural Food Engineering*, 1–16. https://webbut.unitbv.ro/index.php/Series_II/article/view/775

Coimbra, E. A. (2014). Saúde e povos indígenas no Brasil: reflexões a partir do I Inquérito Nacional de Saúde e Nutrição Indígena [Health and indigenous peoples in Brazil: reflections based on the First National Survey of Indigenous People's Health and Nutrition]. *Cadernos de saude publica*, *30*(4), 855–859. https://doi.org/10.1590/0102-311x00031214

El Universo. (2011, December 2). *"Arca de Noé" De Semillas Preserva biodiversidad en Ecuador*. El Universo. Retrieved February 7, 2023, from https://www.eluniverso.com/2011/12/02/1/1430/un-arca-noe-semillas-preserva-biodiversidad-ecuador.html/

Diario El Mercurio. (2021, January 17). *En Cuenca hay una "Casa de semillas" con 150 variedades*. Retrieved February 21, 2023, from https://elmercurio.com.ec/2021/01/16/en-cuenca-hay-una-casa-de-semillas-con-150-variedades/

Erazo, P. M. (2010, May 22). *Los Guardianes de las semillas andinas*. BBC News Mundo. Retrieved February 7, 2023, from https://www.bbc.com/mundo/america_latina/2010/05/100521_0214_ecuador_semillas_andinas

Exposito-Alonso, M., Booker, T. R., Czech, L., Gillespie, L., Hateley, S., Kyriazis, C. C., Lang, P. L. M., Leventhal, L., Nogues-Bravo, D., Pagowski, V., Ruffley, M., Spence, J. P., Toro Arana, S. E., Weiß, C. L., & Zess, E. (2022). Genetic diversity loss in the Anthropocene. Science (New York, N.Y.), 377(6613), 1431–1435. https://doi.org/10.1126/science.abn5642

Fino, D. (2014). Diseño de un banco de semillas nativas como alternativa tecnológica de agricultura sostenible para la preservación de la biodiversidad en el municipio De Ubaque, Cundinamarca. Recuperado de: https://hdl.handle.net/10901/11237.

Howard, G. S. (2000). Adapting human lifestyles for the 21st century. American psychologist, 55(5), 509.

Jaisankar, I., Velmurugan, A., & Sivaperuman, C. (2018). Biodiversity Conservation: Issues and Strategies for the Tropical Islands. *Biodiversity and Climate Change Adaptation in Tropical Islands*, 525–552. https://doi.org/10.1016/b978-0-12-813064-3.00019-3

J.P. Bakker, P. Poschlod, R.J. Strykstra, R.M. Bekker & K. Thompson. (1996). Seed banks and seed dispersal: important topics in restoration ecology. *Acta botanica neerlandica,* 45(4), 461–490.

Kottler, E. J., Dickman, E. E., Sexton, J. P., Emery, N. C., & Franks, S. J. (2021). Draining the Swamping Hypothesis: Little Evidence that Gene Flow Reduces Fitness at Range Edges. *Trends in ecology & evolution*, *36*(6), 533–544. https://doi.org/10.1016/j.tree.2021.02.004

Kuhnlein, H., Erasmus, B., Creed-Kanashiro, H., Englberger, L., Okeke, C., Turner, N., Allen, L., & Bhattacharjee, L. (2006). Indigenous peoples' food systems for health: finding interventions that work. *Public health nutrition*, *9*(8), 1013–1019.

Lennon, J.T., den Hollander, F., Wilke-Berenguer, M. et al. Principles of seed banks and the emergence of complexity from dormancy. Nat Commun 12, 4807 (2021). https://doi.org/10.1038/s41467-021-24733-1

Malhotra, N., Panatu, S., Singh, B., Negi, N., Singh, D., Singh, M., & Chandora, R. (2019). Genetic Resources: Collection, Conservation, Characterization and Maintenance. *Lentils*, 21–41. https://doi.org/10.1016/b978-0-12-813522-8.00003-0

McKenzie-Mohr, D. (2000). Fostering sustainable behavior through community-based social marketing. A*merican Psychologist*, 55(5), 531.

McNally, N. (2013, April 15). *World's gene pool crucial for survival*. FAO. Retrieved February 7, 2023, from https://www.fao.org/news/story/en/item/174330/icode/

Montoya, A. G., Vizuete, D. C., Parra, F. E., Velásquez, R. C., Jácome, E. M., Pozo, F. Q., & Santamaría, G. R. (2020). Current situation of tourism in Ecuador: Challenges and opportunities. *Green World*, 3, 11.

Ordonez N, Seidl MF, Waalwijk C, Drenth A, Kilian A, Thomma BPHJ, et al. (2015) Worse Comes to Worst: Bananas and Panama Disease—When Plant and Pathogen Clones Meet. PLoS Pathog 11(11): e1005197. https://doi.org/10.1371/journal.ppat.1005197

Parraguez-Vergara, E., Contreras, B., Clavijo, N., Villegas, V., Paucar, N., & Ther, F. (2018). Does indigenous and campesino traditional agriculture have anything to contribute to food sovereignty in Latin America? Evidence from Chile, Peru, Ecuador, Colombia, Guatemala and Mexico. *International Journal of Agricultural Sustainability*, *16*(4-5), 326-341.

Rosenthal, H., Alia Sunderji, Doocy, S., Broner, T., Pappier, J., & Sandler, L. (2020, August 13). *Colombia: Indigenous kids at risk of malnutrition, death*. Human Rights Watch. Retrieved February 7, 2023, from https://www.hrw.org/news/2020/08/13/colombia-indigenous-kids-risk-malnutrition-death

Ruiz-Ballesteros, E. (2011). Social-ecological resilience and community-based tourism: An approach from Agua Blanca, Ecuador. *Tourism Management*, 32(3), 655-666.

Shivanna, K.R. The Sixth Mass Extinction Crisis and its Impact on Biodiversity and Human Welfare. Reson 25, 93–109 (2020). https://doi.org/10.1007/s12045-019-0924-z

Skarbø, K. (2014). The Cooked is the Kept: Factors Shaping the Maintenance of Agro-biodiversity in the Andes. *Human Ecology, 42*(5), 711-726. https://doi.org/10.1007/s10745-014-9685-1

Swiderska, K., Argumedo, A. (2022). Indigenous Seed Systems and Biocultural Heritage: The Andean Potato Park's Approach to Seed Governance. In: Nishikawa, Y., Pimbert, M. (eds) Seeds for Diversity and Inclusion. Palgrave Macmillan, Cham. https://doi.org/10.1007/978-3-030-89405-4_4

Tanksley, S. D., & McCouch, S. R. (1997). Seed banks and molecular maps: unlocking genetic potential from the wild. Science (New York, N.Y.), 277(5329), 1063–1066. https://doi.org/10.1126/science.277.5329.1063

The "Doomsday" Vault Where the World's Seeds Are Kept Safe. (2018). TIME.com. https://time.com/doomsday-vault/

Torres, L. V., Balarezo, M. C. A., & Martínez, F. C. (2018). Minga: el patrimonio intangible en la Campaña de Mantenimiento de San Roque, Cuenca-Ecuador. ASRI: *Arte y sociedad. Revista de investigación*, (14), 9.

Vandvik, V., Klanderud, K., Meineri, E., Måren, I. E., & Töpper, J. (2015). Seed banks are biodiversity reservoirs: species–area relationships above versus below ground. *Oikos*, *125*(2), 218–228. https://doi.org/10.1111/oik.02022

Vernooy, R., Sthapit, B., Otieno, G., Shrestha, P., & Gupta, A. (2017). The roles of community seed banks in climate change adaption. *Development in Practice*, 27(3), 316-327.Walker, B., Gunderson, L., Kinzig, A., Folke, C., Carpenter, S., & Schultz, L. (2006). A handful of heuristics and some propositions for understanding resilience in social-ecological systems. *Ecology and society*, 11(1).

Wight, A. (2020, June 2). *Around the world, indigenous seed banks are helping to preserve culture, Boost Nutrition and protect the environment*. Resilience. Retrieved February 1, 2023, from https://www.resilience.org/stories/2021-03-29/around-the-world-indigenous-seed-banks-are-helping-to-preserve-culture-boost-nutrition-and-protect-the-environment/

Yfantidou, G., & Matarazzo, M. (2017). The future of sustainable tourism in developing countries. *Sustainable development*, 25(6), 459-466.

Torres, L. V., Balarezo, M. C. A., & Martínez, F. C. (2018). Minga: el patrimonio intangible en la Campaña de Mantenimiento de San Roque, Cuenca-Ecuador. ASRI: *Arte y sociedad. Revista de investigación*, (14), 9.

Appendix

Appendix A: Interview Questions for Sayausi Locals

Objective 1 : Semi-structured interview

The goal of this interview is to gauge the current engagement Sayausi locals have with the seed bank, and factors that drive community members to become involved.

Informed Consent: You are invited to participate in an interview for a published research project at WPI. Semi-structured interviews will be used to understand the current state of the Sayausi seed bank and methods of community engagement with it. Interviewees will be asked a set of questions to lead into an open-ended discussion. The goal of these interviews is to gauge the current engagement Sayausi locals have with the seed bank, and factors that drive community members to become involved. The interviews will be with Sayausi locals. The semi-structured interviews will last approximately 30 minutes. The first half of the interview will be structured by five questions, which will then lead to an open discussion. Any published results of individual responses will be anonymous and identifiable information such as age and address will not be shared. Interviewees will be asked for consent to be recorded before interviews begin.The entirety of these interviews is voluntary. If any of these questions make you uncomfortable, you can skip the question as all are optional and can withdraw from the process at any time. Interviewees can ask any questions about the interview or project before the interview begins.

For further information about this project or about your rights as a research participant, please contact any of the involved below:

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Interview Guide

Sayausi Locals

1. Are you involved in your local community? If so, what are you involved in?
2. How do you become aware of events taking place in the community?
3. What factors encourage you to participate in the community?
4. Have you participated in the Sayausi seed bank?
5. What would attract you to participate with the seed bank?

Objetivo 1: Entrevista semiestructurada

El objetivo de esta entrevista es evaluar el compromiso actual que tienen los locales de Sayausi con el banco de semillas y los factores que impulsan a los miembros de la comunidad a involucrarse.

Consentimiento informado: Está invitado a participar en una entrevista para un proyecto de investigación publicado en WPI. Se utilizarán entrevistas semiestructuradas para comprender el estado actual del banco de semillas de Sayausi y los métodos de participación de la comunidad en él. A los entrevistados se les hará una serie de preguntas para conducir a una discusión abierta. El objetivo de estas entrevistas es evaluar el compromiso actual que tienen los lugareños de Sayausi con el banco de semillas y los factores que impulsan a los miembros de la comunidad a involucrarse. Las entrevistas serán con habitantes de Sayausi. Las entrevistas semiestructuradas tendrán una duración aproximada de 30 minutos. La primera mitad de la entrevista estará estructurada por cinco preguntas, y luego se convertirá en una discusión abierta. Todos los resultados publicados de respuestas individuales serán anónimos y no se compartirá información identificable como la edad y la dirección. A los entrevistados se les pedirá su consentimiento para ser grabados antes de que comiencen las entrevistas. La totalidad de estas entrevistas es voluntaria. Si alguna de estas preguntas lo hace sentir incómodo, puede omitir la pregunta ya que todas son opcionales y puede retirarse del proceso en cualquier momento. Los entrevistados pueden hacer cualquier pregunta sobre la entrevista o el proyecto antes de que comience la entrevista.

Para obtener más información sobre este proyecto o sobre sus derechos como participante de la investigación, comuníquese con cualquiera de los involucrados a continuación:

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Guía de entrevista
Locales de Sayausi

1. ¿Está involucrado en su comunidad local? Si es así, ¿en qué estás involucrado?
2. ¿Cómo te enteras de las actividades que tienen lugar en la comunidad?
3. ¿Qué factores te animan a participar en la comunidad?
4. ¿Has participado en el banco de semillas de Sayausi?
5. ¿Qué te atraería a participar con el banco de semillas?

Appendix B : Interview Questions for Farmers

Objective 1 : Semi-structured interview

The goal of this interview is to learn about the crops locally grown, and the potential interest from farmers to participate in the Sayausi seed bank.

Informed Consent: You are invited to participate in an interview for a published research project at WPI. Semi-structured interviews will be used to understand the current state of the Sayausi seed bank and methods of community engagement with it. Interviewees will be asked a set of questions to lead into an open-ended discussion. The goal of these interviews is to learn about the crops locally grown, and the potential interest from farmers to participate in the Sayausi seed bank. The interviews will be with Sayausi farmers. The semi-structured interviews will last approximately 30 minutes. The first half of the interview will be structured by five questions, which will then lead to an open discussion. Any published results of individual responses will be anonymous and identifiable information such as age and address will not be shared. Interviewees will be asked for consent to be recorded before interviews begin.The entirety of these interviews is voluntary. If any of these questions make you uncomfortable, you can skip the question as all are optional and can withdraw from the process at any time. Interviewees can ask any questions about the interview or project before the interview begins.

For further information about this project or about your rights as a research participant, please contact any of the involved below:

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Interview Guide

Farmers

1. What kind of crops do you grow?
2. What do you do with the seeds from your harvest?
3. Do you recover your seeds at all?
4. What would attract you to use a seed bank?
5. Do you use a seed bank?
6. Could you benefit from the seed bank?
    a. If so, how could you benefit?
    b. If not, what could the seed bank provide that would be beneficial?

Objetivo 1: Entrevista semiestructurada
El objetivo de esta entrevista es conocer los cultivos locales y el posible interés de los agricultores de participar en el banco de semillas de Sayausi.

Consentimiento informado: Está invitado a participar en una entrevista para un proyecto de investigación publicado en WPI. Se utilizarán entrevistas semiestructuradas para comprender el estado actual del banco de semillas de Sayausi y los métodos de participación de la comunidad en él. A los entrevistados se les hará una serie de preguntas para conducir a una discusión abierta. El objetivo de estas entrevistas es conocer los cultivos locales y el interés potencial de los agricultores en participar en el banco de semillas de Sayausi. Las entrevistas serán con agricultores de Sayausi. Las entrevistas semiestructuradas tendrán una duración aproximada de 30 minutos. La primera mitad de la entrevista estará estructurada por cinco preguntas, y luego se convertirá en una discusión abierta. Todos los resultados publicados de respuestas individuales serán anónimos y no se compartirá información identificable como la edad y la dirección. A los entrevistados se les pedirá su consentimiento para ser grabados antes de que comiencen las entrevistas. La totalidad de estas entrevistas es voluntaria. Si alguna de estas preguntas lo hace sentir incómodo, puede omitir la pregunta ya que todas son opcionales y puede retirarse del proceso en cualquier momento. Los entrevistados pueden hacer cualquier pregunta sobre la entrevista o el proyecto antes de que comience la entrevista.

Para obtener más información sobre este proyecto o sobre sus derechos como participante de la investigación, comuníquese con cualquiera de los involucrados a continuación:

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Guía de entrevista
Agricultores

1. ¿Qué tipo de cultivos cultivas?
2. ¿Qué haces con las semillas de tu cosecha?
3. ¿Recuperas tus semillas en absoluto?
4. ¿Qué te atraería a utilizar un banco de semillas?
5. ¿Usas un banco de semillas?
6. ¿Te podrías beneficiar del banco de semillas?
7. Si es así, ¿cómo podría beneficiarse?
8. Si no, ¿qué podría proporcionar el banco de semillas que sería beneficioso?

Appendix C : Interview Questions for Indigenous Leaders

Objective 1 : Semi-structured interview

The goal of this interview is to learn how community leaders encourage locals to participate and engage in traditions, and local events.

Informed Consent: You are invited to participate in an interview for a published research project at WPI. Semi-structured interviews will be used to understand the current state of the Sayausi seed bank and methods of community engagement with it. Interviewees will be asked a set of questions to lead into an open-ended discussion. The goal of this interview is to learn how community leaders encourage locals to participate and engage in traditions, and local events. The interviews will be conducted with indigenous leaders. The semi-structured interviews will last approximately 30 minutes. The first half of the interview will be structured by five questions, which will then lead to an open discussion. Any published results of individual responses will be anonymous and identifiable information such as age and address will not be shared. Interviewees will be asked for consent to be recorded before interviews begin.The entirety of these interviews is voluntary. If any of these questions make you uncomfortable, you can skip the question as all are optional and can withdraw from the process at any time. Interviewees can ask any questions about the interview or project before the interview begins.

For further information about this project or about your rights as a research participant, please contact any of the involved below:

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Interview Guide

Indigenous Leaders

1. What engages people to participate in their community?
2. How can culture motivate someone into participating in a community activity?

Objetivo 1: Entrevista semiestructurada
El objetivo de esta entrevista es aprender cómo los líderes comunitarios alientan a los lugareños a participar y participar en las tradiciones y eventos locales.

Consentimiento informado: está invitado a participar en una entrevista para un proyecto de investigación publicado en WPI. Se utilizarán entrevistas semiestructuradas para comprender el estado actual del banco de semillas de Sayausi y los métodos de participación de la comunidad en él. A los entrevistados se les hará una serie de preguntas para conducir a una discusión abierta. El objetivo de esta entrevista es aprender cómo los líderes comunitarios alientan a los lugareños a participar y participar en las tradiciones y eventos locales. Las entrevistas se realizarán con líderes indígenas. Las entrevistas semiestructuradas tendrán una duración aproximada de 30 minutos. La primera mitad de la entrevista estará estructurada por cinco preguntas, y luego se convertirá en una discusión abierta. Todos los resultados publicados de respuestas individuales serán anónimos y no se compartirá información identificable como la edad y la dirección. A los entrevistados se les pedirá su consentimiento para ser grabados antes de que comiencen las entrevistas. La totalidad de estas entrevistas es voluntaria. Si alguna de estas preguntas lo hace sentir incómodo, puede omitir la pregunta ya que todas son opcionales y puede retirarse del proceso en cualquier momento. Los entrevistados pueden hacer cualquier pregunta sobre la entrevista o el proyecto antes de que comience la entrevista.

Para obtener más información sobre este proyecto o sobre sus derechos como participante de la investigación, comuníquese con cualquiera de los involucrados a continuación:

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Guía de entrevista
Líderes Indígenas

1. ¿Qué hace que las personas participen en su comunidad?
2. ¿Cómo puede la cultura motivar a alguien a participar en una actividad comunitaria?

Appendix D : Interview Questions for Tania Guaján

Objective 1 : Semi-structured interview

The goal of this interview is to gain an understanding of where the seed bank stands and determine possible areas in which community members can get involved.

Informed Consent: You are invited to participate in an interview for a published research project at WPI. Semi-structured interviews will be used to understand the current state of the Sayausi seed bank and methods of community engagement with it. Interviewees will be asked a set of questions to lead into an open-ended discussion. The goal of this interview is to gain an understanding of where the seed bank stands and determine possible areas in which community members can get involved. The interviews will be conducted with the Sisay Pacha store owner, Tania Guaján. The semi-structured interviews will last approximately 30 minutes. The first half of the interview will be structured by five questions, which will then lead to an open discussion. Any published results of individual responses will be anonymous and identifiable information such as age and address will not be shared. Interviewees will be asked for consent to be recorded before interviews begin.The entirety of these interviews is voluntary. If any of these questions make you uncomfortable, you can skip the question as all are optional and can withdraw from the process at any time. Interviewees can ask any questions about the interview or project before the interview begins.

For further information about this project or about your rights as a research participant, please contact any of the involved below:

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Interview Guide

Tania Guaján

1. What is the history of the seed bank?
2. What are the roles that currently exist within the seed bank?
3. How many seed varieties does the seed bank store?
4. Is there a method in place in which people can purchase seeds?
5. Is there a method in place in which people can donate seeds?

Objetivo 1: Entrevista semiestructurada
El objetivo de esta entrevista es obtener una comprensión de dónde se encuentra el banco de semillas y determinar las posibles áreas en las que los miembros de la comunidad pueden participar.

Consentimiento informado: está invitado a participar en una entrevista para un proyecto de investigación publicado en WPI. Se utilizarán entrevistas semiestructuradas para comprender el estado actual del banco de semillas de Sayausi y los métodos de participación de la comunidad en él. A los entrevistados se les hará una serie de preguntas para conducir a una discusión abierta. El objetivo de esta entrevista es obtener una comprensión de dónde se encuentra el banco de semillas y determinar las posibles áreas en las que los miembros de la comunidad pueden participar. Las entrevistas las realizará la dueña de la tienda Sisay Pacha, Tania Guaján. Las entrevistas semiestructuradas tendrán una duración aproximada de 30 minutos. La primera mitad de la entrevista estará estructurada por cinco preguntas, y luego se convertirá en una discusión abierta. Todos los resultados publicados de respuestas individuales serán anónimos y no se compartirá información identificable como la edad y la dirección. A los entrevistados se les pedirá su consentimiento para ser grabados antes de que comiencen las entrevistas. La totalidad de estas entrevistas es voluntaria. Si alguna de estas preguntas lo hace sentir incómodo, puede omitir la pregunta ya que todas son opcionales y puede retirarse del proceso en cualquier momento. Los entrevistados pueden hacer cualquier pregunta sobre la entrevista o el proyecto antes de que comience la entrevista.

Para obtener más información sobre este proyecto o sobre sus derechos como participante de la investigación, comuníquese con cualquiera de los involucrados a continuación:

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Guía de entrevista
Tania Guaján

1. ¿Cuál es la historia del banco de semillas?
2. ¿Cuáles son los roles que existen actualmente dentro del banco de semillas?
3. ¿Cuántas variedades de semillas almacena el banco de semillas?
4. ¿Existe algún método en el que las personas puedan comprar semillas?
5. ¿Existe algún método en el que las personas puedan donar semillas?

Appendix E : Free Listing Prompt
Objective 1: Free Listing

Informed Consent: You are invited to participate in a free listing activity for a published research project at WPI. The purpose of this activity is to understand the current cultural relevance of the local seed bank. The free listing activity will last approximately 5 minutes. Any published results of individual responses will be anonymous and identifiable information such as name and address will not be shared. The entirety of this activity is voluntary. If at any point you feel uncomfortable, you can withdraw from the process. Participants can ask any questions about the activity or project before the free listing activity begins.

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Free Listing Prompt

1. Can you list the first five things that come to mind when you think about the Sayausi seed bank?

Objetivo 1: Metodo de Listar

Consentimiento informado: Está invitado a participar en una actividad de listado gratuito para un proyecto de investigación publicado en WPI. El propósito de esta actividad es comprender la relevancia cultural actual del banco de semillas local. La actividad de publicación gratuita durará aproximadamente 5 minutos. Todos los resultados publicados de las respuestas individuales serán anónimos y no se compartirá información identificable como el nombre y la dirección. La totalidad de esta actividad es voluntaria. Si en algún momento te sientes incómodo, puedes retirarte del proceso. Los participantes pueden hacer cualquier pregunta sobre la actividad o el proyecto antes de que comience la actividad de publicación gratuita.

Para obtener más información sobre este proyecto o sobre sus derechos como participante de la investigación, comuníquese con cualquiera de los involucrados a continuación:

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Tema de la Actividad

1. ¿Puedes enumerar las primeras cinco cosas que te vienen a la mente cuando piensas en el banco de semillas de Sayausi?

Appendix F : Observation Note Keeping
Objective 1: Observation

This observation method will be used to obtain information about the community participation that takes place at local festivals. The following demonstrates an example for note keeping: At these festivals, the team will look at the involvement of the people volunteering, vendors, and customers.

Topics:	Notes:
People volunteering	
Vendors	
Customers	
Rituals	

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Objetivo 1: Observación

Este método de observación se utilizará para obtener información sobre la participación comunitaria que se lleva a cabo en las fiestas locales. A continuación se muestra un ejemplo para llevar notas: En estos festivales, el equipo observará la participación de las personas que se ofrecen como voluntarias, los proveedores y los clientes.

Temas:	Notas:
Voluntarios	
Vendedores	
Clientes	
Rituales	

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Appendix G: Interview Questions for Seed Bank Managers

Objective 2: Semi-structured interview

The goal of this interview is to understand and contextualize how other seed banks function in the context of their respective community and how their managers have interacted with community members.

Informed Consent: You are being invited to participate in an interview part of a published research project at WPI. The purpose of the interview is to gain knowledge about how other seed banks function in the context of their respective community and how their managers have interacted with community members. This interview will last approximately 30 minutes and any published results of individual responses will be anonymous and identifiable information such as age and address will not be shared. Interviewees will be asked for consent to be recorded before interviews begin. All interviews are voluntary and if any of these questions make you uncomfortable, you may skip any of them as they are optional. You may also withdraw at any time during the interview. Interviewees may ask any questions about the interview or project before we begin the process. For further questions or concerns please contact:

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Interview Guide

Sisay Pacha seed bank manager (Taina Guaján) and Cuenca seed bank manager

1. General questions to ease into interview: How long have you been running the store/seed bank for? How did you start your business and what was that process like?
2. How did the seed bank become part of Sisay Pacha/Cuenca? Could you tell us about its history?
3. How would you say the seed bank contributes to the community? What kind of relationship do you think it has with community members?
4. Are there areas where you think your seed bank could be improved? If so, could you tell us more about them?
5. Do you think the seed bank holds any cultural importance?
    a. If so, what aspects of culture do you see in it?
    b. If not, how do you think culture can be incorporated into it?
6. Are there areas where you can see more community engagement with the seed bank?

Objetivo 2: Entrevista semiestructurada

El objetivo de esta entrevista es comprender y contextualizar cómo funcionan otros bancos de semillas en el contexto de su respectiva comunidad y cómo han interactuado sus gestores con los miembros de la comunidad.

Consentimiento informado: Se le invita a participar en una entrevista que forma parte de un proyecto de investigación publicado en WPI. El objetivo de esta entrevista es comprender y contextualizar cómo funcionan otros bancos de semillas en el contexto de su respectiva comunidad y cómo han interactuado sus gestores con los miembros de la comunidad. Las entrevistas durarán aproximadamente 30 minutos y los resultados publicados de las respuestas individuales serán anónimos y no se compartirá información identificable como la edad y la dirección. Se pedirá a los entrevistados su consentimiento para ser grabados antes de comenzar las entrevistas. Todas las entrevistas son voluntarias y, si alguna de estas preguntas le incomoda, puede saltárselas, ya que son opcionales. También puede retirarse en cualquier momento de la entrevista. Los entrevistados pueden hacer cualquier pregunta sobre la entrevista o el proyecto antes de que empecemos el proceso. Si tiene alguna duda o pregunta, póngase en contacto con

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Guía de entrevista
Gerente del banco de semillas de Sisay Pacha (Taina Guaján) y gerente del banco de semillas de Cuenca

1. Preguntas generales para facilitar la entrevista: ¿Cuánto tiempo llevas al frente de la tienda/banco de semillas? ¿Cómo empezaste tu negocio y cómo fue el proceso?
2. ¿Cómo llegó el banco de semillas a formar parte de Sisay Pacha/Cuenca? ¿Podría hablarnos de su historia?
3. ¿Cómo dirías que contribuye el banco de semillas a la comunidad? ¿Qué tipo de relación crees que tiene con los miembros de la comunidad?
4. ¿Hay aspectos en los que cree que su banco de semillas podría mejorar? Si es así, ¿podría hablarnos más de ellas?
5. ¿Cree que el banco de semillas tiene alguna importancia cultural? En caso afirmativo, ¿qué aspectos de la cultura ve en él?
6. Si no es así, ¿cómo cree que puede incorporarse la cultura en él? ¿Existen áreas en las que pueda verse un mayor compromiso de la comunidad con el banco de semillas?

Appendix H: Interview Questions for NGOs

Objective 2: Semi-structured interview

The goal of this interview is to gain knowledge about methods of community involvement through an NGO lens.

Informed Consent: You are being invited to participate in an interview part of a published research project at WPI. The purpose of the interview is to gain knowledge about methods of community involvement through an NGO lens. This interview will last approximately 30 minutes and any published results of individual responses will be anonymous and identifiable information such as age and address will not be shared. Interviewees will be asked for consent to be recorded before interviews begin. All interviews are voluntary and if any of these questions make you uncomfortable, you may skip any of them as they are optional. You may also withdraw at any time during the interview. Interviewees may ask any questions about the interview or project before we begin the process. For further questions or concerns please contact:

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Interview Guide
NGO's

1. General questions to ease into interview: How long have you been with the NGO? How did you become involved in it?
2. Do you know about the seed bank here in Sayausi?
    a. If so, is the NGO involved with it?
    b. Do you have suggestions for how the seed bank could be improved?
    c. What kinds of community engagement do you see with the seed bank?
        i. If you do not see engagement, how do you think it could be promoted to the community?
    d. By better promoting the seed bank, what kinds of community impact do you think will happen?

Objetivo 2: Entrevista semiestructurada

El objetivo de esta entrevista es conocer los métodos de participación comunitaria desde el punto de vista de una NGO.

Consentimiento informado: Se le invita a participar en una entrevista que forma parte de un proyecto de investigación publicado en WPI. El objetivo de esta entrevista es conocer los métodos de participación comunitaria desde el punto de vista de una organización no gubernamental. Las entrevistas durarán aproximadamente 30 minutos y los resultados publicados de las respuestas individuales serán anónimos y no se compartirá información identificable como la edad y la dirección. Se pedirá a los entrevistados su consentimiento para ser grabados antes de comenzar las entrevistas. Todas las entrevistas son voluntarias y, si alguna de estas preguntas le incomoda, puede saltárselas, ya que son opcionales. También puede retirarse en cualquier momento de la entrevista. Los entrevistados pueden hacer cualquier pregunta sobre la entrevista o el proyecto antes de que empecemos el proceso. Si tiene alguna duda o pregunta, póngase en contacto con:

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Guía de entrevista
NGOs

1. Preguntas generales para facilitar la entrevista: ¿Cuánto tiempo lleva en la ONG? ¿Cómo se involucró en ella?
2. ¿Conoce el banco de semillas de Sayausi?
    a. En caso afirmativo, ¿participa la ONG en él?
    b. ¿Tiene alguna sugerencia para mejorar el banco de semillas?
    c. ¿Qué tipo de compromiso comunitario ve en el banco de semillas?
        i. Si no lo ve, ¿cómo cree que podría promocionarse entre la comunidad?
    d. ¿Qué tipo de impacto cree que tendrá en la comunidad una mejor promoción del banco de semillas?

Appendix I: Interview Questions for Business Owners

Objective 2: Semi-structured interview

The goal of this interview is to understand how store owners promote their respective businesses to community members and in turn attract customers.

Informed Consent: You are being invited to participate in an interview part of a published research project at WPI. The purpose of the interview is to understand how owners promote their respective businesses to community members and in turn attract customers. This interview will last approximately 30 minutes and any published results of individual responses will be anonymous and identifiable information such as age and address will not be shared. Interviewees will be asked for consent to be recorded before interviews begin. All interviews are voluntary and if any of these questions make you uncomfortable, you may skip any of them as they are optional. You may also withdraw at any time during the interview. Interviewees may ask any questions about the interview or project before we begin the process. For further questions or concerns please contact:

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Interview Guide
Small Business Owners

1. General questions to ease into interview: How long have you been running your store/business for? How did you start your store/business and what was that process like? Could you describe your day-to-day life owning your store/business?
2. How do you engage with the community?
3. How do you attract customers to your business?
    a. Are there specific techniques you've found work well or have not worked?
4. Do you know about the Sayausi seed bank?
    a. If so, how does your business engage with it?
    b. By better promoting the seed bank, what kinds of community impact do you think will happen?

Objetivo 2: Entrevista semiestructurada

El objetivo de esta entrevista es comprender cómo los propietarios de las tiendas promocionan sus respectivos negocios entre los miembros de la comunidad y, a su vez, atraen a los clientes.

Consentimiento informado: Se le invita a participar en una entrevista que forma parte de un proyecto de investigación publicado en WPI. El objetivo de esta entrevista es comprender cómo los propietarios de las tiendas promocionan sus respectivos negocios entre los miembros de la comunidad y, a su vez, atraen a los clientes. Las entrevistas durarán aproximadamente 30 minutos y los resultados publicados de las respuestas individuales serán anónimos y no se compartirá información identificable como la edad y la dirección. Se pedirá a los entrevistados su consentimiento para ser grabados antes de comenzar las entrevistas. Todas las entrevistas son voluntarias y, si alguna de estas preguntas le incomoda, puede saltárselas, ya que son opcionales. También puede retirarse en cualquier momento de la entrevista. Los entrevistados pueden hacer cualquier pregunta sobre la entrevista o el proyecto antes de que empecemos el proceso. Si tiene alguna duda o pregunta, póngase en contacto con:

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Guía de entrevista
Propietarios de pequeñas empresas

1. Preguntas generales para facilitar la entrevista: ¿Cuánto tiempo lleva dirigiendo su tienda/negocio? ¿Cómo puso en marcha su tienda/negocio y cómo fue el proceso? ¿Podría describir su día a día como propietario de su tienda/negocio?
2. ¿Cómo se relaciona con la comunidad?
3. ¿Cómo atrae clientes a su negocio?
    a. ¿Hay técnicas específicas que le hayan funcionado bien o que no le hayan funcionado?
4. ¿Conoce el banco de semillas Sayausi?
    a. En caso afirmativo, ¿cómo colabora su empresa con él?
    b. ¿Qué tipo de impacto cree que tendrá en la comunidad una mejor promoción del banco de semillas?

Appendix J: Interview Questions for Professors

Objective 3: Semi-Structured Interviews

The goal of the interview is to better inform the development of the team's possible promotional strategies in promoting engagement in relation to the Sayausi seed bank using experts in the field of business.

Informed Consent: You are being asked to participate in an interview part of a published research project conducted by a group of WPI students. The goal of the interview is to better inform the development of the team's possible promotional strategies in promoting engagement in relation to the Sayausi seed bank using experts in the field of business. Your participation is voluntary and you may choose to stop the interview at any time. If at any time you feel uncomfortable answering a question you may decline to answer or end the interview. Interviews will approximately last 30 minutes and notes will be taken. With your permission the interview will be recorded. Any given personal information will be kept confidential and not be shared with the project's findings. Interviewees may ask any questions about the interview or project before we begin.

For further information about this project or about your rights as a research participant, please contact any of the involved below:

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Interview Guide

1. How did you first become a professor?
2. Why were you interested in your area of expertise?
3. In your experience what are the most common forms of promotion in Cuenca?
4. In your experience what are the most common forms of increasing community engagement in Cuenca?
5. Are there any forms of promotion you would advise against? Why?
6. Are there any forms of promotion you would strongly suggest? Why?
7. What are some ways you've seen community engagement increase?
8. Do you know about the seed bank in Sayausi?
    a. Do you have suggestions for how the seed bank could be improved?

b. By better marketing the seed bank, what kinds of community impact do you think will happen?
c. Do you think there is much community involvement with the seed bank as of now?

Objetivo 3: Entrevistas semiestructuradas

El objetivo de la entrevista es informar mejor el desarrollo de las posibles estrategias promocionales del equipo para promover el compromiso en relación con el banco de semillas de Sayausi utilizando expertos en el campo de los negocios.

Consentimiento informado: se le pide que participe en una entrevista que forma parte de un proyecto de investigación publicado y realizado por un grupo de estudiantes de WPI. El objetivo de la entrevista es informar mejor el desarrollo de las posibles estrategias promocionales del equipo para promover el compromiso en relación con el banco de semillas de Sayausi utilizando expertos en el campo de los negocios. Su participación es voluntaria y puede optar por detener la entrevista en cualquier momento. Si en algún momento se siente incómodo al responder una pregunta, puede negarse a responder o finalizar la entrevista. Las entrevistas tendrán una duración aproximada de 30 minutos y se tomarán notas. Con su permiso se grabará la entrevista. Cualquier información personal proporcionada se mantendrá confidencial y no se compartirá con los resultados del proyecto. Los entrevistados pueden hacer cualquier pregunta sobre la entrevista o el proyecto antes de comenzar.

Para obtener más información sobre este proyecto o sobre sus derechos como participante de la investigación, comuníquese con cualquiera de los involucrados a continuación:

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Guía de entrevista

1. ¿Cómo te convertiste en profesor por primera vez?
2. ¿Por qué le interesó su área de especialización?
3. Según su experiencia, ¿cuáles son las formas de promoción más comunes en Cuenca?
4. Según su experiencia, ¿cuáles son las formas más comunes de aumentar la participación comunitaria en Cuenca?
5. ¿Hay alguna forma de promoción que desaconsejaría? ¿Por qué?
6. ¿Hay alguna forma de promoción que recomendaría enfáticamente? ¿Por qué?
7. ¿Cuáles son algunas de las formas en que ha visto aumentar la participación de la comunidad?
8. ¿Conoces el banco de semillas en Sayausi?
    a. ¿Tiene sugerencias sobre cómo se podría mejorar el banco de semillas?

b. Mediante una mejor comercialización del banco de semillas, ¿qué tipo de impacto en la comunidad cree que se producirá?
c. ¿Crees que hay mucha participación de la comunidad con el banco de semillas a partir de ahora?

Appendix K: Object Response for Sayausi Community Members

Objective 3: Object response

The goal of the object response is to gather data and better inform the development of the team's possible promotional strategies in promoting engagement in relation to the Sayausi seed bank.

Informed Consent: You are being asked to participate in an object response as part of a published research project conducted by a group of WPI students. The goal of the object response is to gather data and better inform the development of the team's possible promotional strategies in promoting engagement in relation to the Sayausi seed bank. Your participation is voluntary and you may choose to stop the interview at any time. If at any time you feel uncomfortable answering a question you may decline to answer or end the interview. This data collection will last 10 minutes at most. With your permission the interview will be recorded. Any given personal information will be kept confidential and not be shared with the project's findings. Interviewees may ask any questions about the interview or project before we begin.

For further information about this project or about your rights as a research participant, please contact any of the involved below:

Researchers: Andrew Troup, Eugena Choi, Joselin Barbosa
gr-Cultivate-D23@wpi.edu

Project Advisors: Gary Pollice and Robert Kinicki
gpollice@wpi.edu and rek@wpi.edu

Questions For Each Piece of Promotional Material

1. What do you like about this [insert promotional material]?
2. What do you dislike about this [insert promotional material]?
3. What is the goal of this [insert promotional material]?
4. Do you feel there is something missing?
5. What changes, if any, would you suggest?

Objetivo 3: Respuesta del objeto

El objetivo de la respuesta objetiva es recopilar datos e informar mejor el desarrollo de las posibles estrategias promocionales del equipo para promover el compromiso en relación con el banco de semillas de Sayausi.

Consentimiento informado: Se le pide que participe en una respuesta de objeto como parte de un proyecto de investigación publicado realizado por un grupo de estudiantes de WPI. El objetivo de la respuesta objetiva es recopilar datos e informar mejor el desarrollo de las posibles estrategias promocionales del equipo para promover el compromiso en relación con el banco de semillas de Sayausi. Su participación es voluntaria y puede optar por detener la entrevista en cualquier momento. Si en algún momento se siente incómodo al responder una pregunta, puede negarse a responder o finalizar la entrevista. Esta recogida de datos tendrá una duración máxima de 10 minutos. Con su permiso se grabará la entrevista. Cualquier información personal proporcionada se mantendrá confidencial y no se compartirá con los resultados del proyecto. Los entrevistados pueden hacer cualquier pregunta sobre la entrevista o el proyecto antes de comenzar.

Para obtener más información sobre este proyecto o sobre sus derechos como participante de la investigación, comuníquese con cualquiera de los involucrados a continuación:

Investigadores: Andrew Troup, Eugena Choi, Joselin Barbosa
gr-Cultivate-D23@wpi.edu

Asesores del proyecto: Gary Pollice y Robert Kinicki
gpollice@wpi.edu y rek@wpi.edu

Preguntas para cada pieza de material promocional

1. ¿Qué te gusta de este [insertar material promocional]?
2. ¿Qué es lo que no le gusta de este [insertar material promocional]?
3. ¿Cuál es el objetivo de este [insertar material promocional]?
4. ¿Siente que le falta algo?
5. ¿Qué cambios, si los hubiera, sugeriría?