

INNOVATION MINGA

GRASSROOTS INNOVATIONS
FOR HERBALISTS' CHALLENGES



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INTRODUCTION

THE MINGA

Minga is a quichua word and an ancestral practice consisting of collaborative work to bring forward community needs such as the building of communal ditches, roads, planting and harvesting or any common needs.

The **Grassroots Innovation Minga**, coordinated by UNDP Ecuador's Acclab, is a participatory process of co-creation and testing of solutions to respond to challenges faced by herbal market vendors. The intervention culturally adapted Design Thinking Methodology to a popular context. Three thematic challenges were tackled: harnessing of medicinal plants, ancestral knowledge preservation, and climate change.

This report is a result of collaborative work during 8 months divided in four stages: 1) Empathize and define the problem, 2) ideate, 3) prototype, and 4) test solutions with accessible technologies in a constant exercise of collective intelligence.



OUR SLOGAN:
NO SOLUTION WITHOUT
THOSE CONCERNED



THE ACTORS

The Central Platform Primero de Mayo is the most important medicinal herb wholesale market in Quito, located in San Roque. 200 vendors, and over 100 herbalists who grow or collect medicinal plants from the Andean region sell their products here.

The City Museum is our strategic partner. They initiated Territories that Heal Project and their community educators have had an active role in crowdsourcing activities during the *minga*.

ESFOT (Training School for Technologists) joined the *minga* with 28 students and five mentors (professors).

Quito's Municipality: Provided databases for us to put together to make sense of the problem with a single panoramic view, thereby breaking silos of information.

THE CONTEXT

Historically, popular markets have been fundamental in urban food provision. In Quito, the supply chain of fresh products depends mainly on four wholesale markets which provide 63% of the total food crops available in markets and fairs. Despite their importance in supplying food to the city, the absence of public policies aimed at protecting and strengthening popular markets has caused them to weaken and lose customers, whose consumption patterns have changed. In fact, the number of chain supermarkets doubled to that of markets in 2019. (1) The consequences of change in consumption patterns are problematic given that popular markets are places of production and reproduction of culture, care and life, mainly in the hands of women.

The San Roque market is the main host location for the indigenous population who have been expelled from the countryside since the 1970s, therefore, it plays a key role in the connection between rurality and the city. In this same area, the “May First Central Platform” has been operating since January 15, 1975, bringing together more than 250 merchants, of which more than 100 are herbalists dedicated to the production, collection and sales of medicinal herbs. In the early 70s, after continuous expulsions from streets and plazas where their informal sales occurred, herbalists self-organized and created this platform, originally a mud paddock, where they, with *minga* and with self-managed resources, cast their concrete foundation or “platform”.

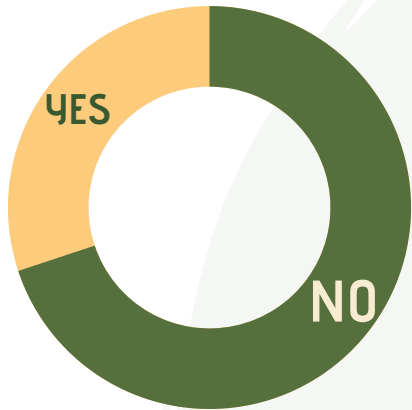
The Platform became, from then on, the city's main medicinal herb distribution center. It supplies intermediary merchants from other markets in the city, including supermarkets and businesses that use medicinal herbs for processing packaged herbs, teas, essential oils, cosmetics, etc.), as well as direct consumers. Wholesale, however, does not represent an advantage or greater profit. In fact, more than 85percent of these producers earn less than the minimum wage. Intermediaries impose ceilings on prices and raise the final price by up to 200 percent. (2)

“This was all mud; we slipped, and we fell while carrying our bundles. Then we organized, each one of us brought two quintals of cement and together, in *minga*, we constructed the platform (slab).”



CHARACTERIZING HERBALISTS

% With Cellular phone

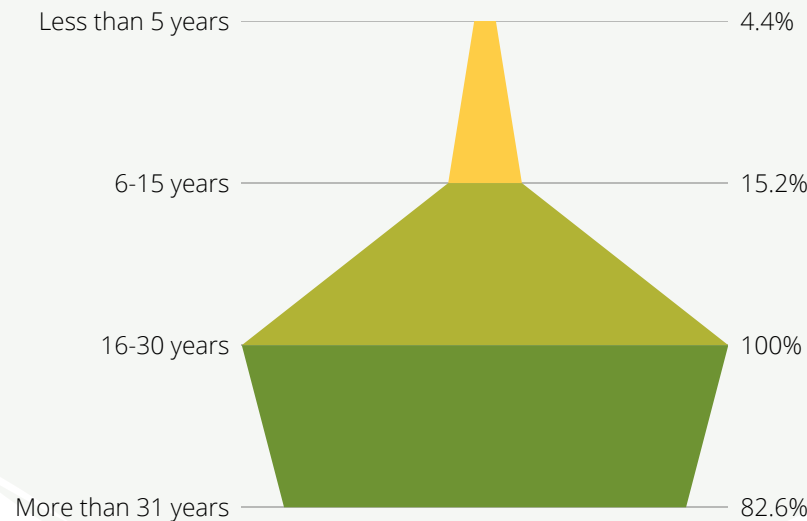


70 percent of herbalists do not have a cellular phone. Digitalization in this context needs to be thought carefully. Expecting herbalists to put the effort in acquiring skills and technology involves adding more strain, given their average workday is 14 hours, leaving little time for trainings.

However, disseminating their market and products through digital means is possible in alliance with organizations and students. Some solutions proposed, in fact, have a digital side to it, targeted to outside audiences.



**Years in the market
(% of herbalists)**

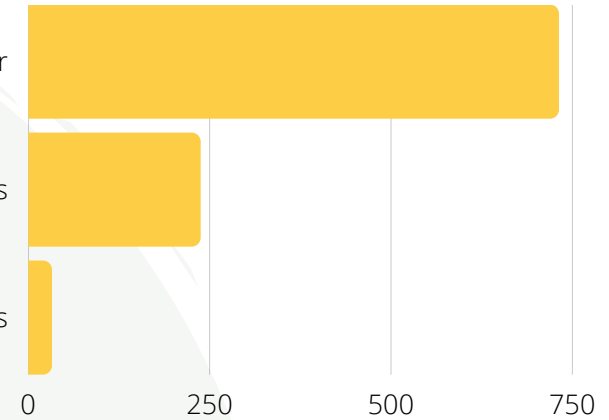


Age

60 years or older

46-59 years

0-45 years



73,1 percent of herbalists are over 60 years old and have been working for more than 31 years.

Their children are not interested in taking over the trade as they consider it too strenuous with very little income.

Herbalists hold the ancestral knowledge of identifying medicinal plants, pruning them, and understanding its uses from an Andean cosmovision or worldview. By collecting and distributing medicinal species, they protect ecosystems and maintain health, life and culture alive.

SLOW THINKING AND FAST LEARNING

Learning requires deep immersion with those closest to the problem. Real participation means continuous dialogue and building trust. Collaboration in a diverse group requires an equal relationship that is built over time.

The deeper the immersion, the more complex the problems and the system. The *minga* in its four stages was about understanding the multiplicity of elements behind herbalists, the relationship between this trade and ecosystems, to uncover layers of problems and entanglements.

Ethnography was a permanent practice. It required continuous visits to the market in the day and at night, to feel in one's skin the 4 am chilly hectic movement. Students, labbers, herbalists, civil servants and mediators visited herbalists farms and learnt the difficulties of growing plants where there is no water. Authentic exchange occurred with continuous dialogues, deliberations on which ideas would work or not and world cafes to imagine our horizons. No one person was more expert than any other. Diverse knowledge was our common ground to build a collective understanding of something that concerns us all: the preservation of a trade, of traditional medicine and the ecosystems surrounding it.

16 workshops and mentoring sessions

11 fieldwork visits for sense-making, ideating and deliberating directly with herbalist in the market

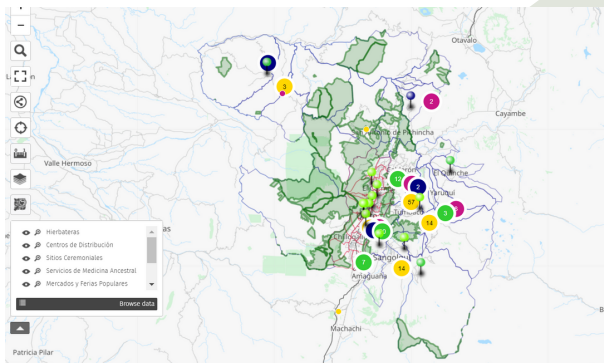
2 field visits to learn from other experiences

31 solutions ideated

5 functioning prototypes developed



THE MAP



The "Territories that Heal" digital map contains geographically positioned multimedia information that show "May First Central Platform" herbalists' places of work and life, medicinal herb distribution circuits in Quito, healing and ceremonial sites, communal lands, and markets.

This network of wisdom, people and connections allow us to show the complexity of the ecosystem of the territories that heal. We want to show that behind an herbalist, lies a combination of natural resources, ancestral knowledge, cultural sites, and a network of producers.

The horizon

Undomesticated herbs come from wild ridges, but where exactly and under whose jurisdiction are those areas?

The need to map harvesting ecosystems was raised when herbalists expressed to the Ministry of Environment the obstacles they face in accessing ecosystems: water contamination, deforestation, or guards impeding their passing. There is no certainty about the jurisdiction of those areas, therefore, georeferenced data will serve as evidence and argument in discussions with government officials.

This map was collaboratively built and contains data provided by the Markets Directorate, the Communes Directorate of the Municipality of Quito, ConQuito (Agrupar) and the collection of herbal information carried out by community mediators from the Museums Foundation

Navigate at: <http://u.osmfr.org/m/765556/> or scan the **QR code**



The problem

In recent years, due to decreasing consumption in popular markets, lack of generational handover, endangered herbal species caused by urbanization and climate crisis, ancestral knowledge about the uses and benefits of medicinal plants is being lost. With herbalists we asked ourselves: How can we preserve that knowledge? How can we disseminate the rich offer of our market?

1.1 CATALOGUE

The solution

Indigenous culture is transmitted orally, and the herbal market offer has never been documented. Resulting from the *minga*, is the 100 MEDICINAL PLANTS CATALOGUE, marking an initial milestone in the commitment to preserve ancestral knowledge linked to Andean medicine.

The catalogue includes medicinal use for western medicine classification illnesses, as well as for indigenous ethno-diseases. Herbs are classified as "cold" or "hot", according to Andean cosmovision.

The horizon

Together with the Central Platform, the City Museum, and indigenous organizations, a dissemination plan will be designed targeted to different audiences.

The catalogue will be used for both, educational purposes with school students, and to attract new and direct customers at fair prices.



More than 20 women herbalists interviewed reported more than 150 herbs. Students were trained on KoboToolBox and data compiled includes: origin, use, season, cold/hot classification, common and scientific name.



Scan de **QR code**

II. HARNESSING ORGANIC EXCESS PRODUCTS

The problem

Every year, 939 tons of food go to waste in Ecuador (FAO). As of 2018, almost 2,000 tons of domestic garbage were produced daily in Quito, of which almost 80 percent was dumped in open-air dumps. In addition, the production of waste in the markets reaches 50 tons per day, of which almost 80% corresponds to organic waste. Medicinal plants are demanded fresh. The excess amount is either lost or sold at bargain unfair prices.

Portfolio of solutions

Making the most of production and improving sales/income is one of the constant concerns of herb farmers. This concern has motivated herbalists to look for solutions that promote their products, and at the same time, approach new markets. An example is a distiller to produce essential oils and herbal medicine tinctures from plants.

The DISTILLER prototype had flaws which showed that distillation processes are cost effective, but require semi-industrial systems. We do not recommend frugal household level distillation for its risks.

However, while building this solution, herbalists learnt the difference between macerate plants and distillation.



2.1 DISTILLER



2.2 SOLAR OVEN



Surplus products, weather conditions or low sales, among other problems, mean perishable products, like herbs, are lost from one day to the other. As consequence, they are sold at low prices or are discarded, causing economic losses. In response, herbalists have used rudimentary systems for drying the product, often exposing plants directly to the sun and the environment.

The second prototype tested the effectiveness of a solar oven. Iterations and adaptations were made, achieving shorter drying times, higher product quality and avoided the loss of raw material due to excess heat or direct sunlight.

The results

What are the benefits of drying with a solar oven than hang drying "as usual"?

Solar oven dryer showed faster dehydration. Comparable results based on humidity indicators, [here](#).

Prototyping the oven was important, not only for the technological solution itself, but to identify an organizational model necessary to dry plants collectively. The market cannot host a drying area, instead, decentralized drying systems have been proposed. The possibility of having a DIY kit and creating a "herbal bank" is being discussed and designed.

The horizon

2.3 COMPOSTING

Organic waste, in the context of fertilizers crisis, can become an opportunity. Can the waste in popular markets be used to generate compost? And with it, new income, or inputs for production?

The third solution to harness excess organic products is composting. A composting system was prototyped, however, before its implementation, a management model is needed. Technological solutions do not solve problems by themselves, they must be supported by cooperative practices and acquired behaviors.

Are market vendors willing to separate waste? What are the obstacles to that? How much organic waste does the May First Platform generate? We must address these questions first, before any composting mechanism is implemented.

The horizon



In alliance with students from the Training School for Technologists, during first trimester of 2023, we will measure organic waste volume and weight and will collect data reported by the market administration and vendors.

With that data, a cooperative management model can be designed in a participatory way.



3.1 WATER IRRIGATION SYSTEM

The problem

Communal irrigation water is wasted in ornamental private or public gardens, and due to the climate crisis water is becoming scarcer. Access to water for productive land is increasingly expensive and distant. Herbalists make an enormous physical effort to transport water to all their fields, many of them uphill, which results in an inefficient use of the resource.

Minga participants presented several ideas that were adjusted or disregarded after analyzing viability according to the context.

As a solution mapping exercise, students visited the Agronomy Faculty where an irrigation system has been designed, commissioned by the Ministry of Agriculture and offered to small producers. To our surprise, it is a USD \$3000 system which farmers are asked to invest in, and given its high cost, its implementation has been limited.

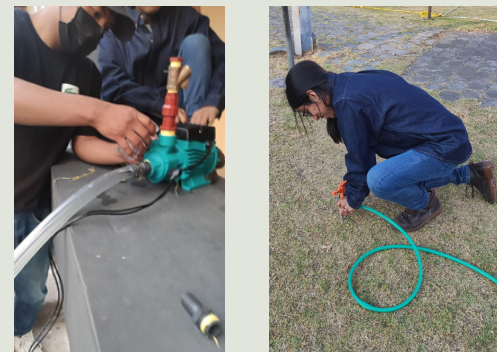
Is it possible to hack the current irrigation system and make it more frugal? Can open code technology sensor system contribute to reduce water usage?

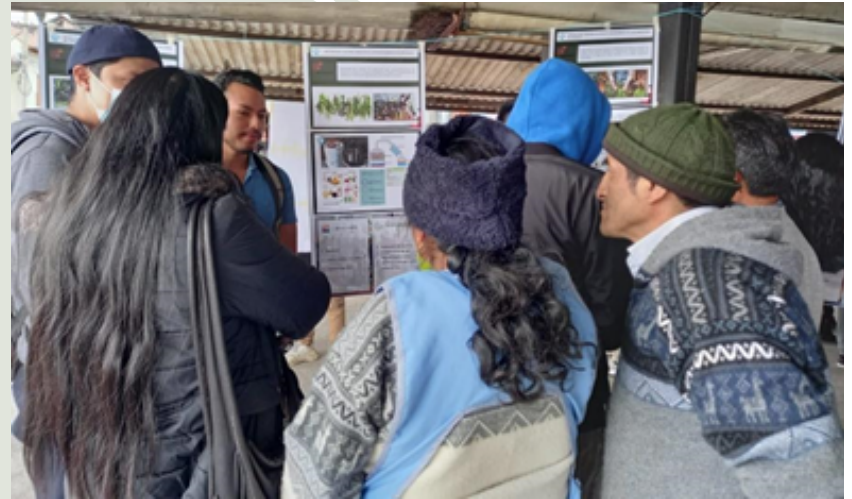
The solution

To answer these questions students prototyped a frugal mobile sprinkler system that uses a software board connected to humidity sensor, reducing the cost to \$400 for a 500 sq m plot. Results can be read in Spanish [here](#).

In the next months this solution will be part of an experiment in two orchards, both with current manual irrigation systems (carrying buckets of water), one of them uphill and the other flat, to measure time and effort reduction and water saving with the sensor.

The horizon





At the World Café to reflect about the Minga´s horizons



Herbalists and popular musicians march to the City Museum to visit the Territories That Heal Exhibition



Jovita Guamán, proudly states, "Earth in my hands".



Verónica Minaya reminds us that, "Andean Culture Lives"

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