



### Committee:

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# Facilitating smallholder farmer engagement with data-driven agriculture: a case of study in the Yucatán Peninsula, México

## YOU MIGHT WANT TO START HERE



The **Seed Guardians** track and monitor maize crops performance to improve crop quality, guarantee ancestral seeds preservation, check for plague prevalence and build climate resilience. However, they were using notebooks and some non-structured excel files, which often caused losing valuable information. So they realized that they needed a better system.



## WHAT WERE MY OBJECTIVES?

1. Determine their specific data collection needs and requirements.
2. Chronologically map crop stages & the most critical information to be collected in every stage.
3. Build and deploy a cloud-based data collection tool designed for their needs.
4. Build capacities on information collection and data analysis.



The Seed Guardians work in the middle of the Yucatán Peninsula in Southeast Mexico. The purple region is their area of influence and where this project was developed.

## HOW DID I DO IT?

### Methods

I mainly used **qualitative methods** to gather the information required for the development of the tool. During a total of 1.5 months of field visits I performed:

- 15 semi-structured interviews
- Five focus/working groups
- Peripheral member role observations



## WHAT DID I FIND?

### Results & Discussion

1. The Milpa (traditional Mayan crop) is a highly detailed and technical process.
2. Most of the information is transmitted orally, everyone knows, but its not recorded.
3. The Seed Guardians are using many sustainable intensification techniques, and they are working.
4. Climate change is a real concern and it's effects on crops are worsening.

The seed guardians are creating a new vision of agriculture and traditional beliefs in the region. Thanks to their initiatives young people are getting increasingly interested in agriculture and traditional mayan culture.

## TOOL DEVELOPMENT

The diagram illustrates the tool development process. It starts with a detailed timeline of the Milpa cycle (Ciclo de la Milpa) from January to April, showing various stages like sowing, growth, and harvest. This leads to the development of a mobile application (ENCUESTA DE MONITOREO PARA COSECHA 2022) which is used for data collection. An actual screenshot of the app shows a survey form. Finally, the data is processed into a dashboard with bar charts and tables, showing actual harvest data for 2022.

With the requirements of every stage, deployment of a virtual (cloud-based) survey.

**ACTUAL SCREENSHOT:** Data collection system up and running. 2022 will be the first year where the harvest information will be collected digitally.

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## THE ISSUE

1. Data driven and precision agriculture are "game changing" technologies, but they are very resource and knowledge intensive.
2. They are widely used in the developed world, where productivity is already high and there is appropriate infrastructure to collect and share data.
3. Smallholder farmers in the developing world don't have the access to these tools, but they need them.

## WHO DID I WORK WITH?

The project was developed for the **Seed Guardians**, a 25 year old Mayan organization created as a way to share experiences, better agricultural practices, seeds, crop inputs, and mostly, to promote the preservation of their traditional culture and its sacred traditions in the state of Yucatán, México.

Geographical location of the project



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