

Cassava Data-Driven Agronomy

Putting data at the service of agriculture

Objectives

1. To assess potential for early warning system to mitigate weather risks, through scenario analysis for crop resilience to weather-induced pest and disease threats.
2. Describe production situations and quantify pest risks in farmers' field..
3. Develop an app-based monitoring system that provides estimates of cassava production area, yield, and production loss due to biotic and abiotic stress.
4. Enhance the capacity for cassava crop monitoring and pest surveillance by using crowd sourcing toolkits.
5. Provide farmers with a straightforward and vital decision support tool for pest management in cassava production.

Components

1 2014-2016 Recall Data



Crop yield



GPS location



Pest & disease

Farming practices



IMPACT

- ✓ Reduced yield gap
- ✓ Enhanced adaptive capacity of farming systems to climate change
- ✓ Increased livelihoods
- ✓ Empowered partners

Data Acquisition

- ✓ Pooling existing data through partnerships
- ✓ Modern data capture and management strategies using a mobile app and online DB

2 Weather Data



3 Soils Data



4 Data Mining Team and Partners at Work



CROP MODELLING Recall Data

300 Farmer
Respondents



779 2014-2016
Cropping Events



414 Data with
GPS locations



Results and Products

Data Visualization and Online API

https://appdatacollect-3b7d7.firebaseio.com/analytics/analytics_demo.html

Scientific Research Publication

[title of research publication here]

Data Analysis

- ✓ Review, cleaning and formatting of collected data
- ✓ Merging of collected data with weather and soils data
- ✓ Machine learning



Methods Data Collection

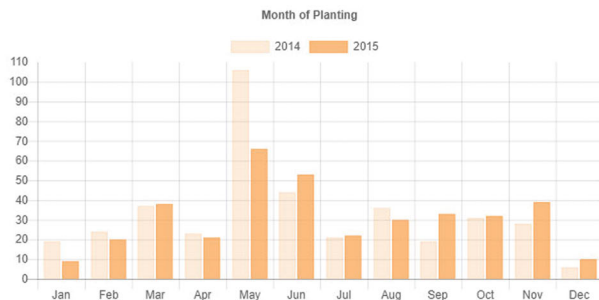
- ✓ Development of mobile app and data archiving system
- ✓ Mobile app usability and testing with data collectors
- ✓ Field surveys on farmers and online data syncing

INITIAL Findings

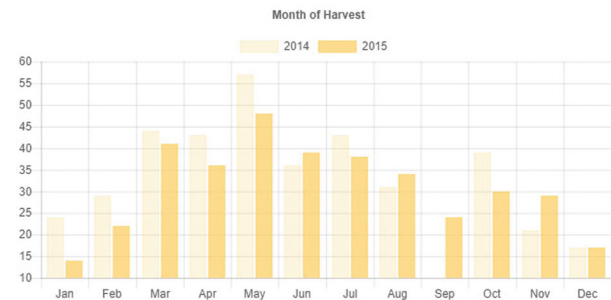
PEAK OF PLANTING May - June



Month of Planting



Month of Harvest



PEAK OF HARVEST MAY

Start of peak of harvesting is March until July, but the majority of the farmers harvest on May

HERBICIDE APPLICATION



Key Findings

- ✓ Data confirms that hot temperature equates to more pest damage; this accounts for the detailed assessment of weather features.
- ✓ Confirms literature of soil organic carbon for disease damage.
- ✓ Identified conditions/characteristics where frequency of pesticide application can increase pest and disease damage.