



Introduction to PlantVillage Nuru

What is PlantVillage Nuru

How it was made

What can it do

How to get Nuru

How to use Nuru

Things to consider when using
NURU



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Work with a team of researchers at IITA and PlantVillage to develop Nuru, evaluate it's performance and train it's users - agricultural extension officers and farmers.



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(IITA –Tanzania)**

**Worked with Nuru team from IITA and worked with
PlantVillage to develop Nuru, evaluate it's
performance and train it's users
(agricultural extension officers and farmers).**



Platform for
Big Data
in Agriculture

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2017 & 2019 WINNER

PlantVillage Nurur: Pest
and disease monitoring
using AI



Food and Agriculture
Organization of the
United Nations



What is PlantVillage Nuru (Nuru)?



Welcome to **PlantVillage**
I am **Nuru**, your assistant



Home



Nuru



Community



Resources



Settings

An **mobile app** for
identification of disease
symptoms and pest damage
on plants

NURU – Swahili word for **Light**
‘The light that farmers can use
to solve their agricultural
problems’

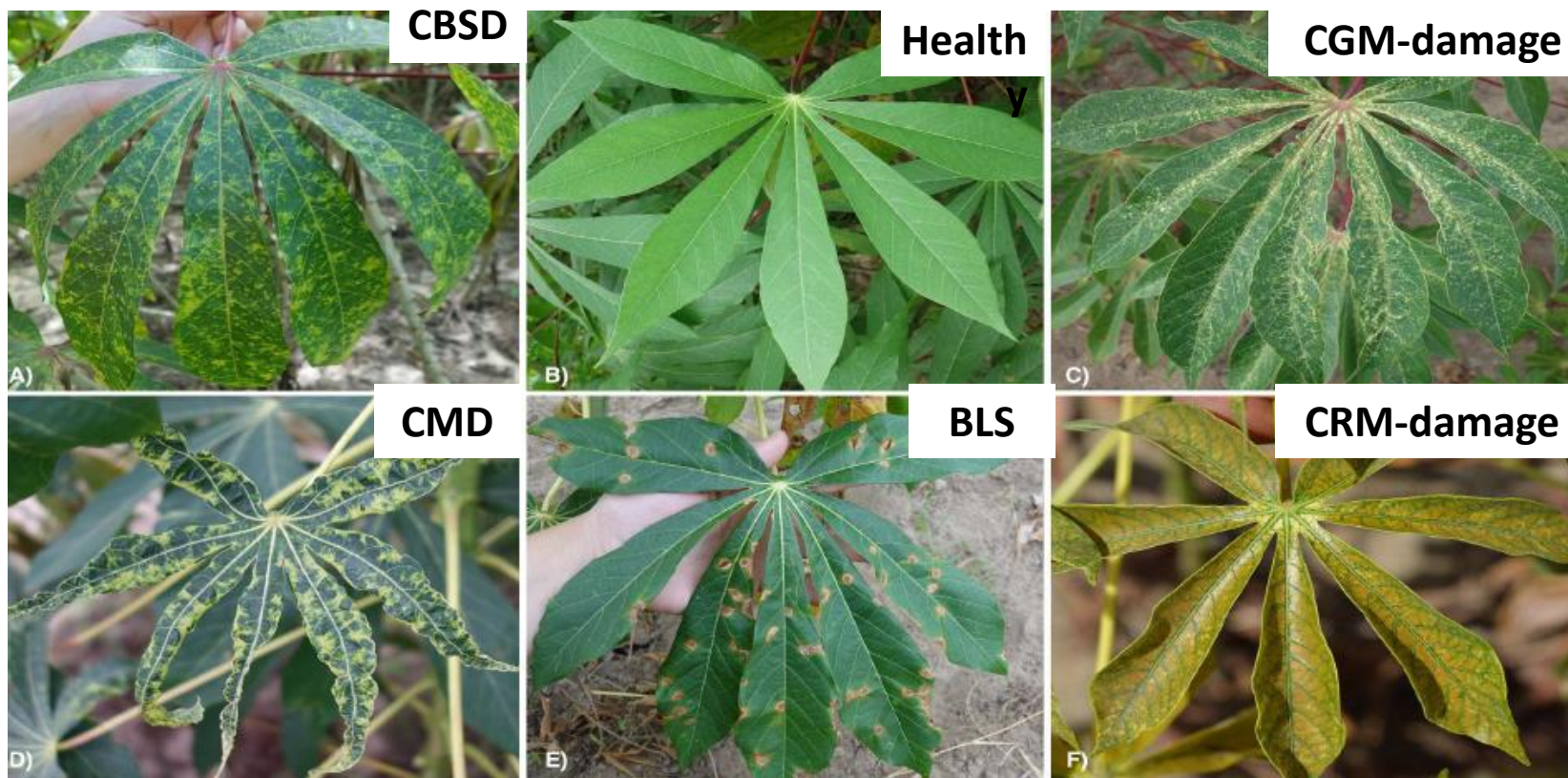
HOW WAS PLANTVILLAGE NURU MADE?

The object and image detection technology (Tensor flow) developed by Google was modified such that it can detect objects (plant leaves) and patterns (disease symptoms).



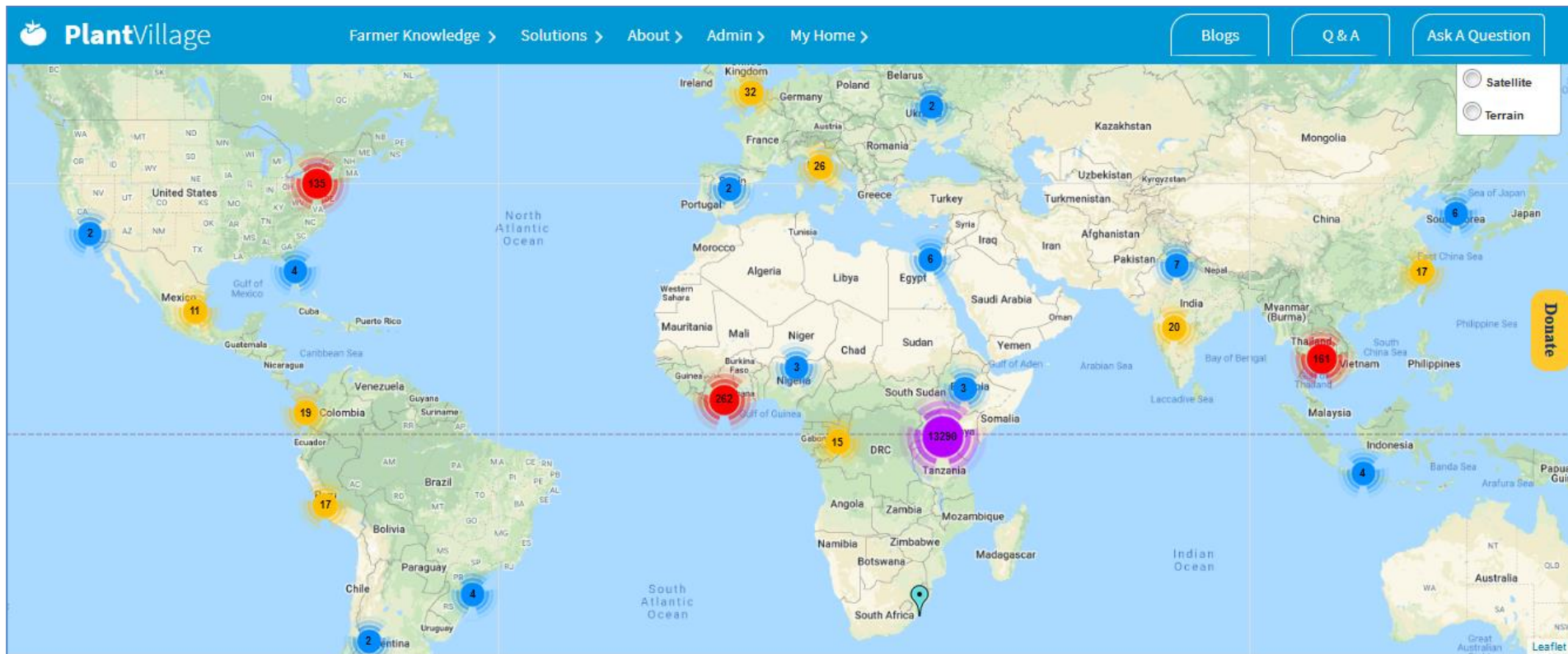
The Cassava - Artificial intelligence system

Trained using thousands of images of healthy, diseased and mite-infested cassava leaves from different cassava varieties.



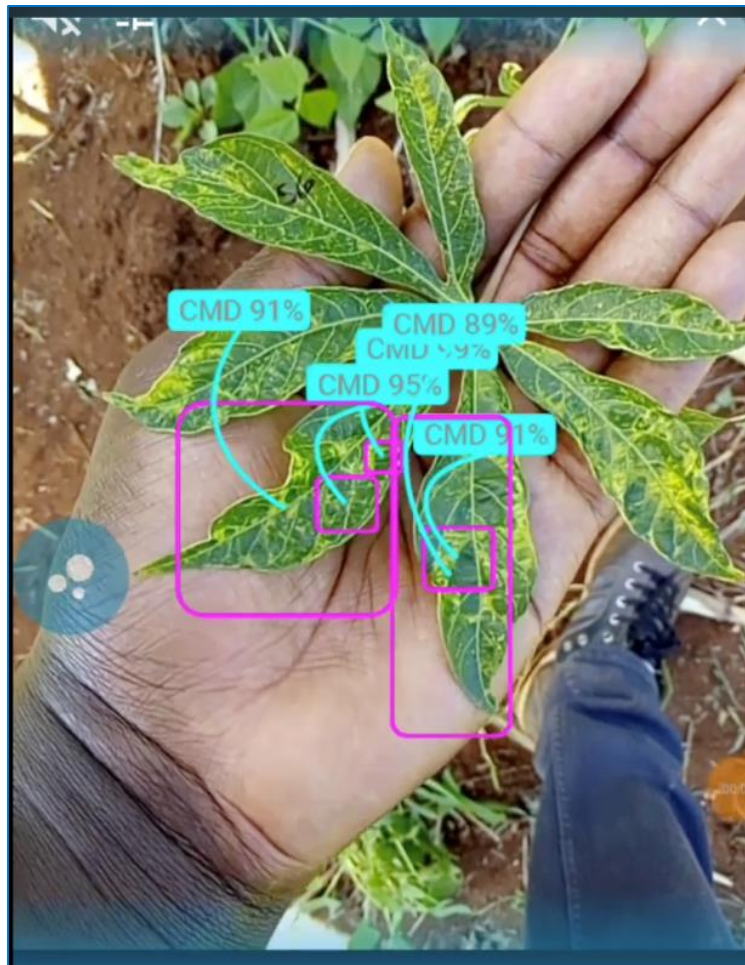
Nuru can differentiate healthy and diseased/infested plants.

Users of Nuru – Cassava AI



What can Nuru do?

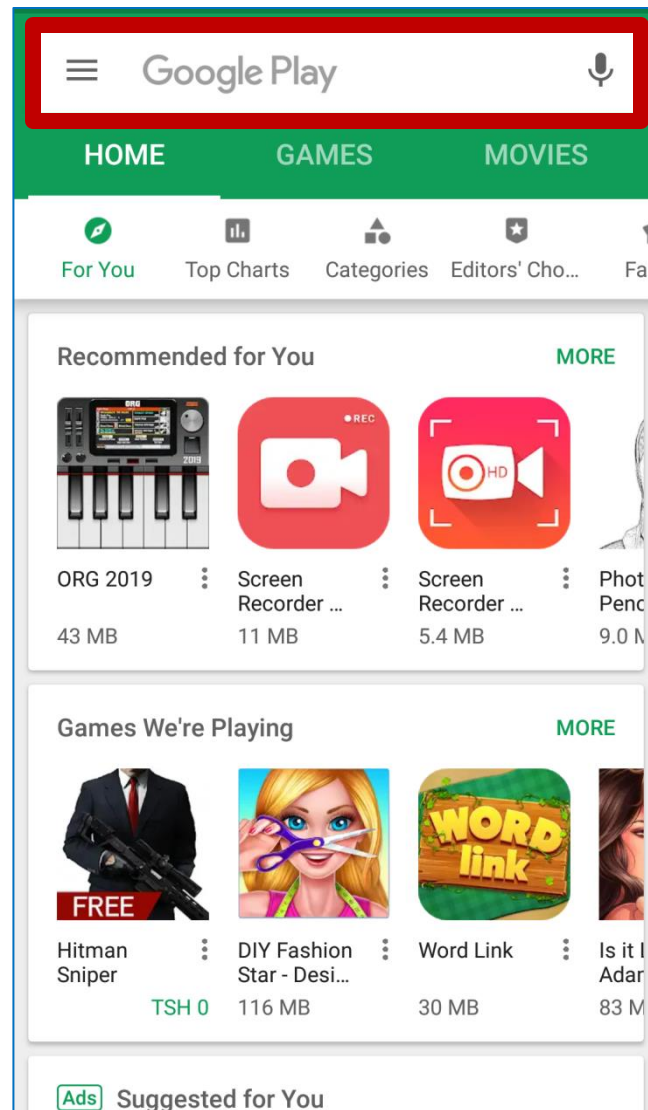
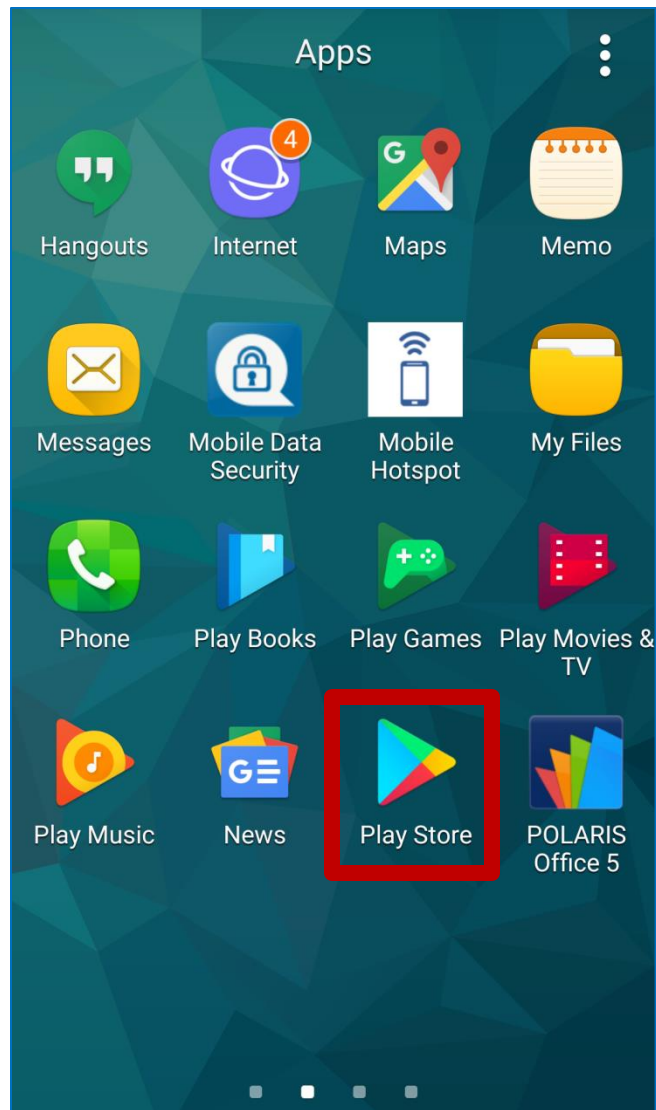
The Cassava AI – PlantVillage Nuru



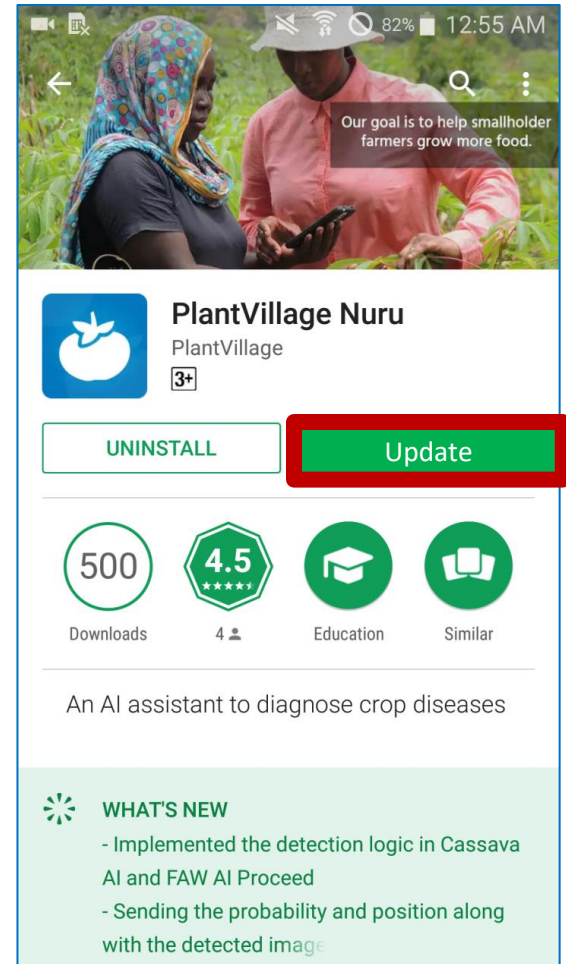
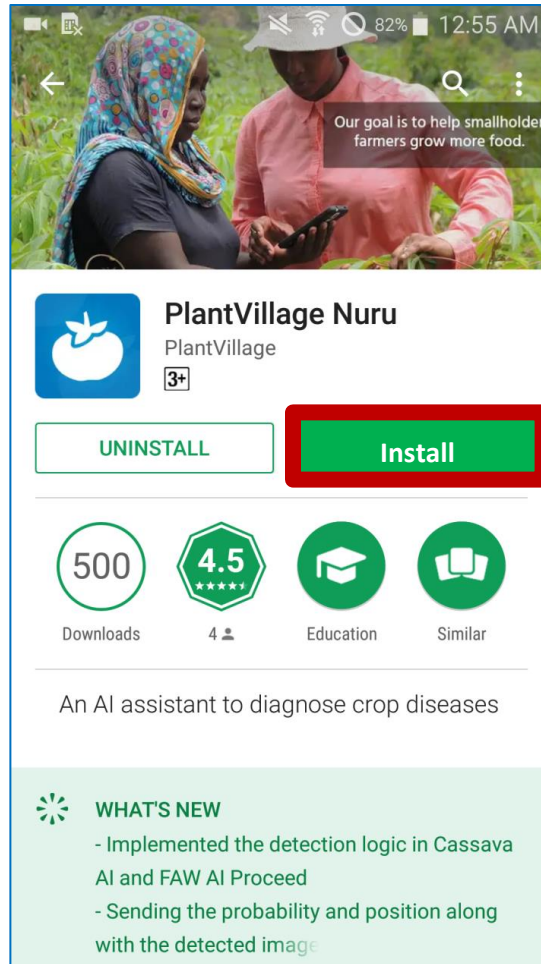
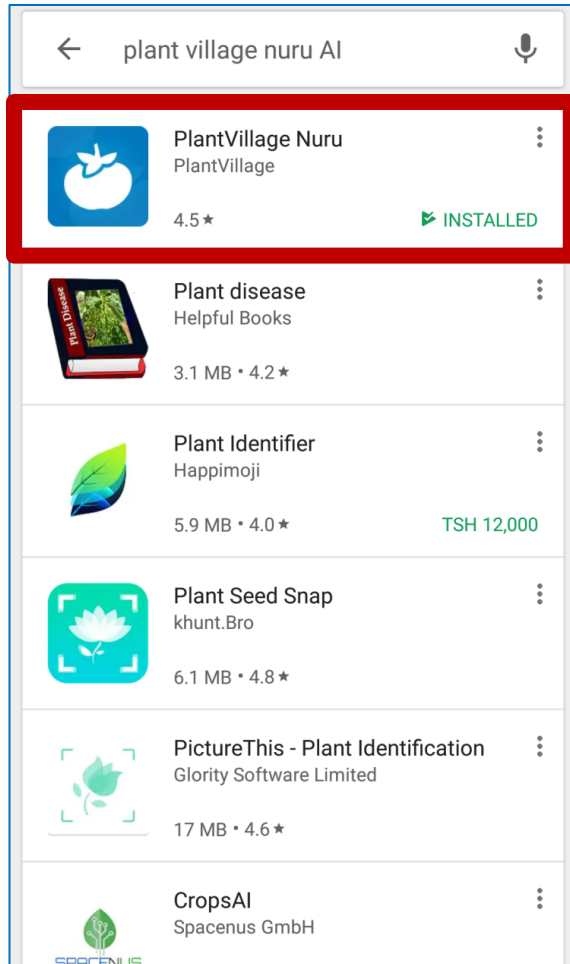
1. Determine presence of diseases symptoms or pest on the crop (CMD, CBSD and CGM-damage).
2. Gives feedback (**real-time**)
3. Shows you the symptoms of the disease/symptoms it has recognize (**teaching tool**)
4. Give you advice on management and/or control practices for the disease/pest it has recognize

All this can be done in absence of internet connection

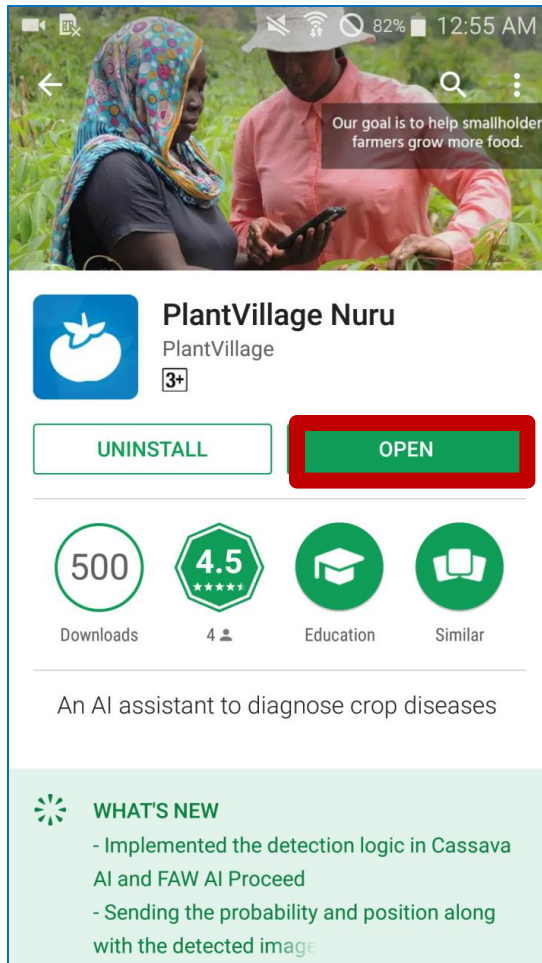
Where to get PlantVillage NURU



Where to get PlantVillage NURU




Where to get PlantVillage NURU



Cassava AI - Features

← Login



PlantVillage

Email

Password

Login

Forgot Password?

Don't have an Account?

Register Now

Beta Version (1952)

← Register

Your Name*

Email

Mobile Number

Select user type*

Farmer ▼

Country*


Tanzania

Password*

Confirm Password*

Sign Up

← Register



A confirmation email was sent to your email account. You must follow the instructions in the email before your account can be activated

OK

Password*

.....

Confirm Password*

.....

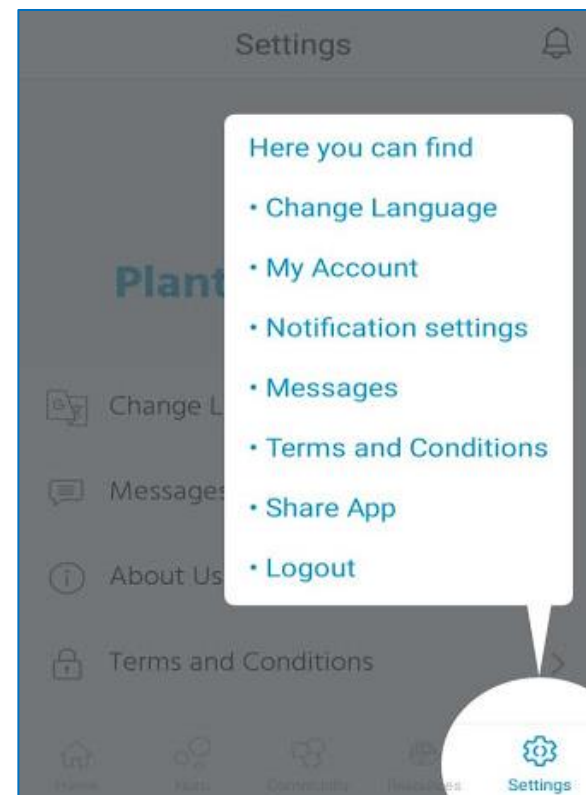
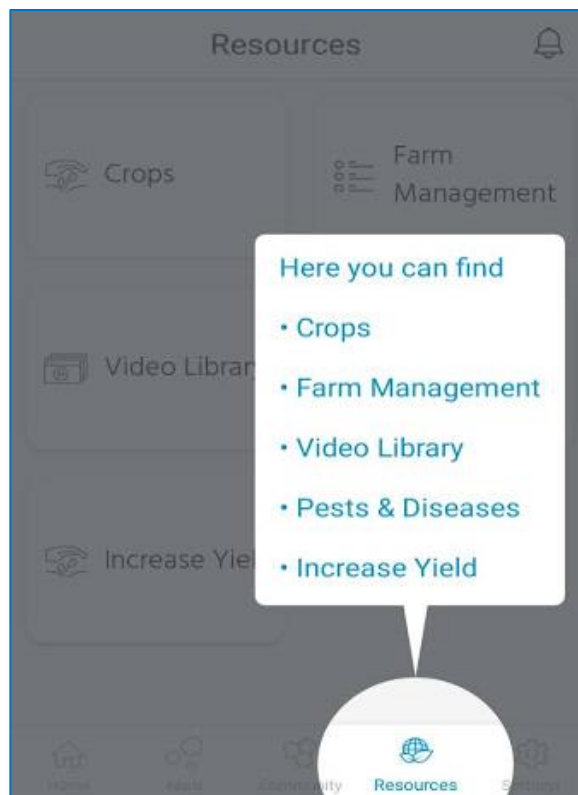
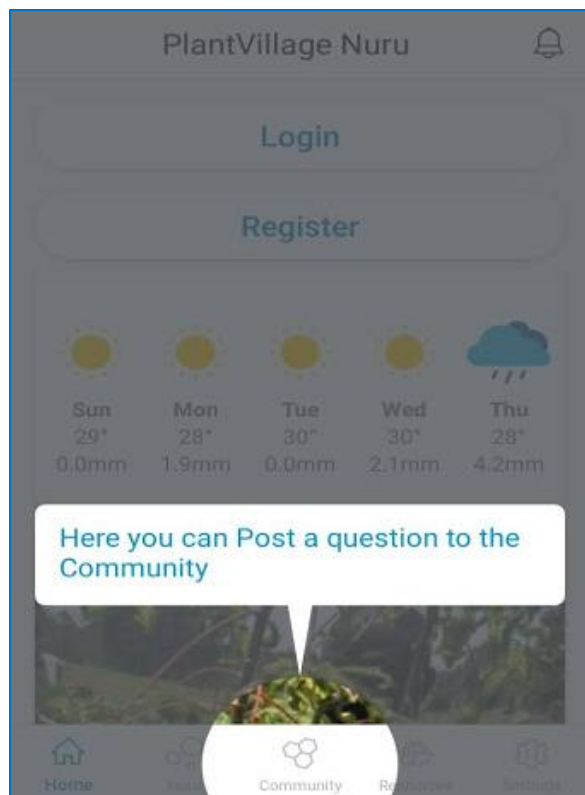
Sign Up

Beta Version

Nuru's Features

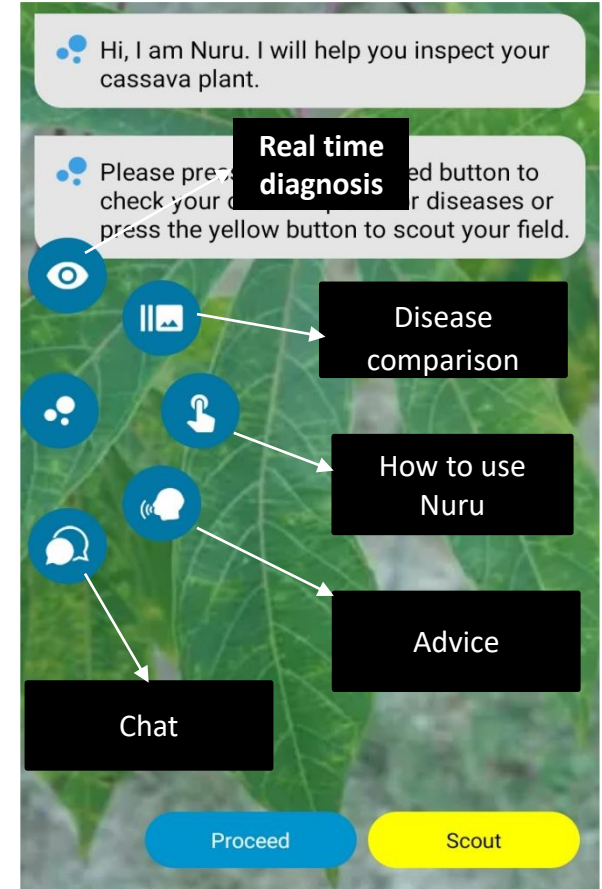
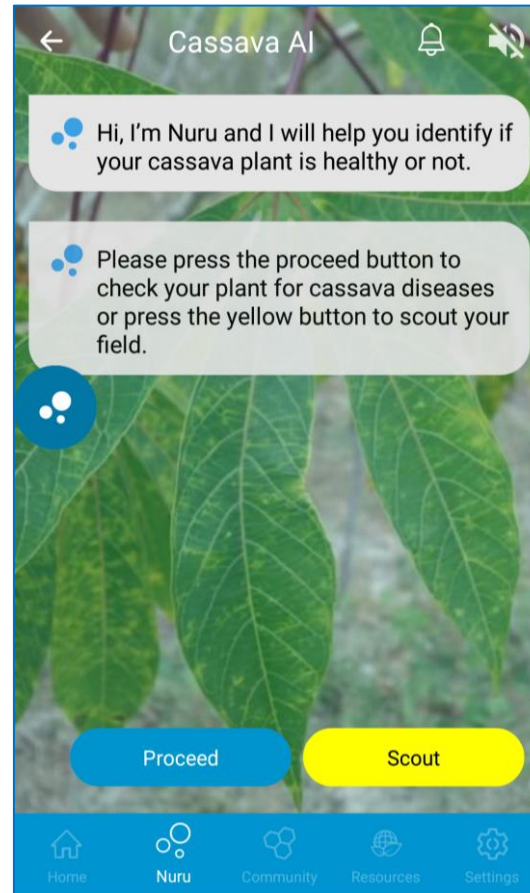


Nuru's Features



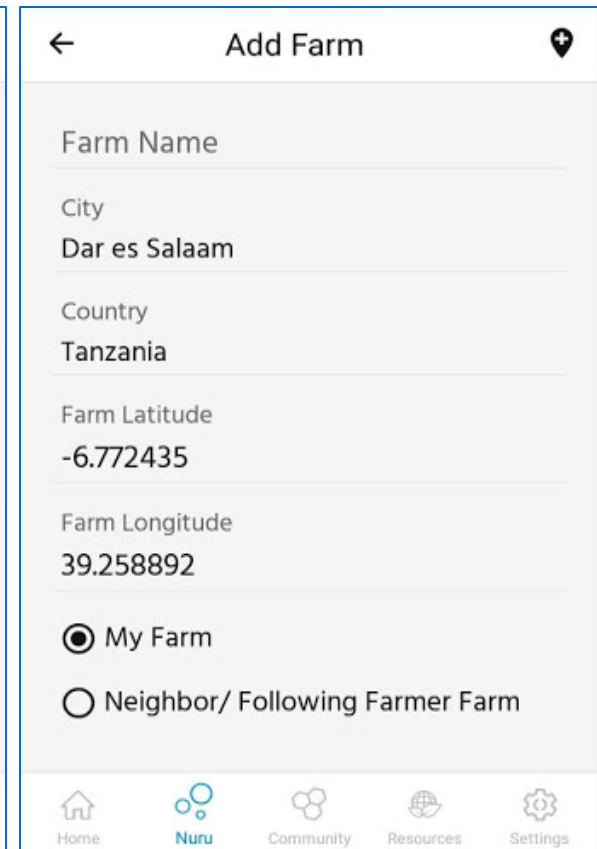
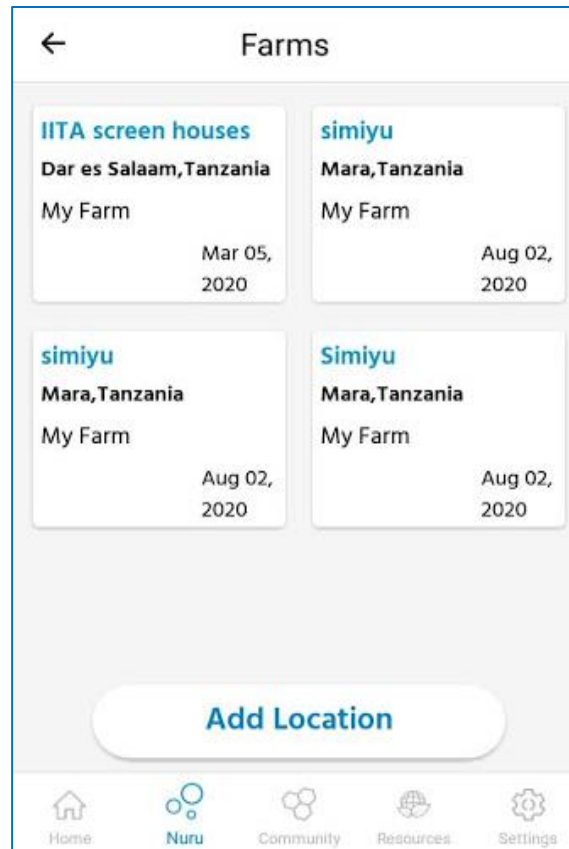
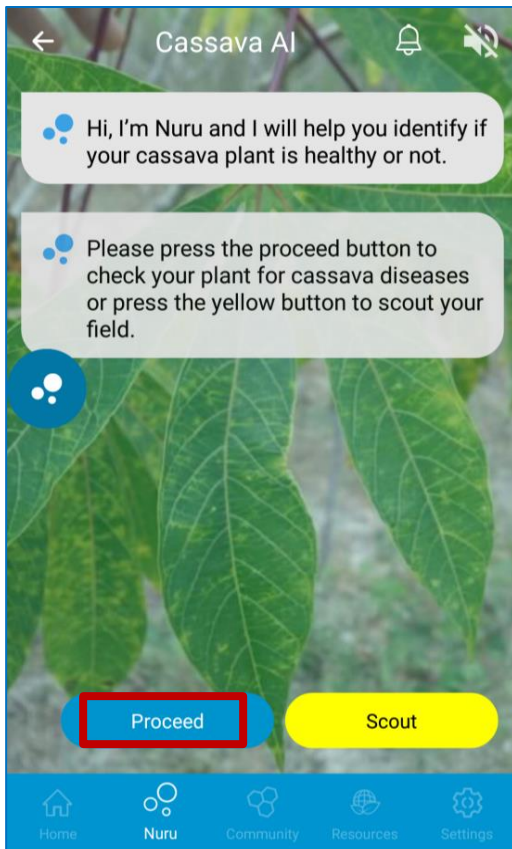
Cassava AI – Disease diagnosis

Check your plants options



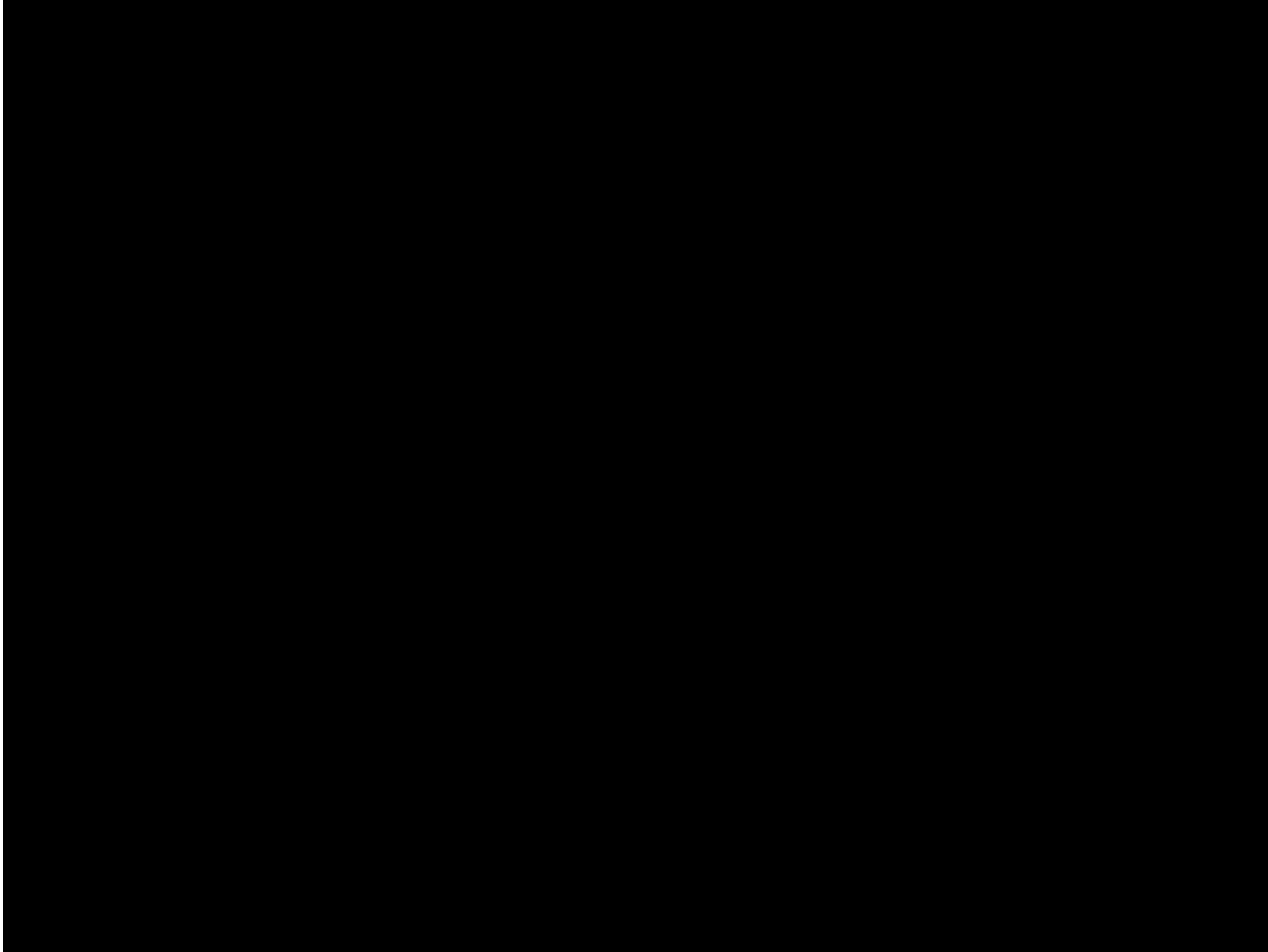
Cassava AI – Disease diagnosis

Check your plants options



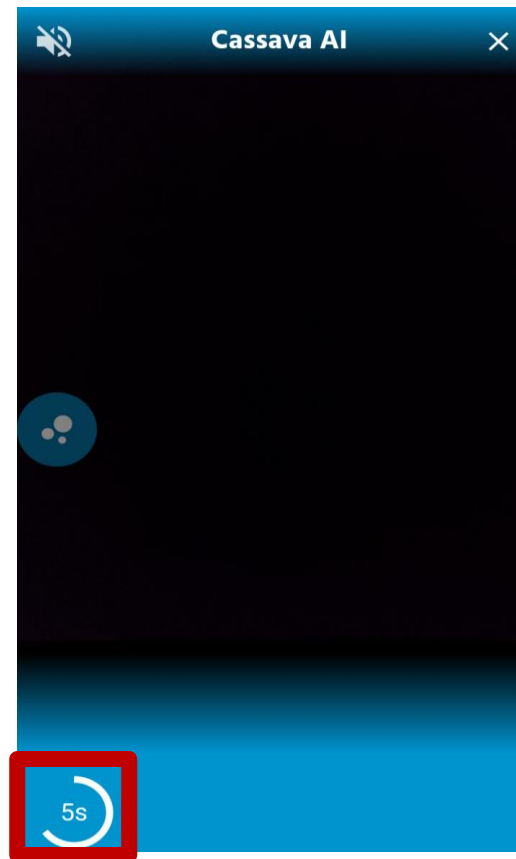
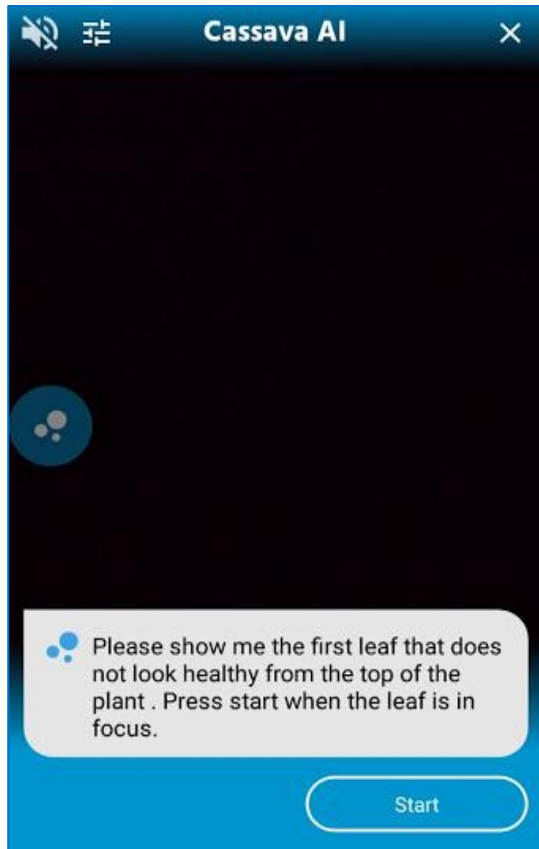
Cassava AI – Disease diagnosis

Adding farms



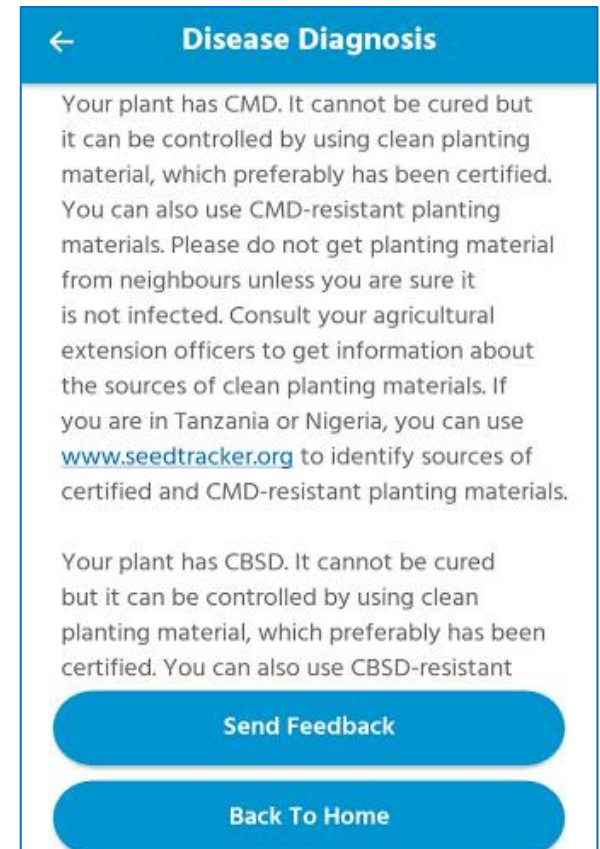
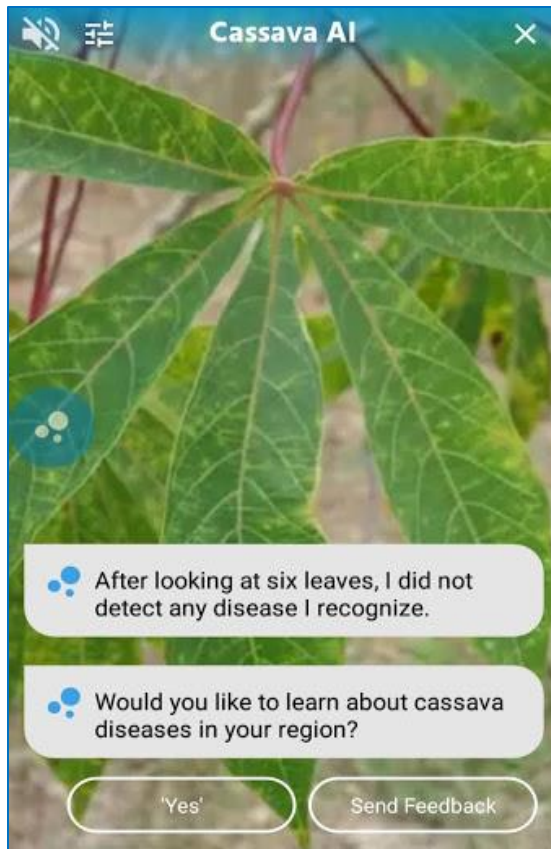
Cassava AI – Disease diagnosis

Whole plant diagnosis



Cassava AI – Disease diagnosis

Whole plant diagnosis



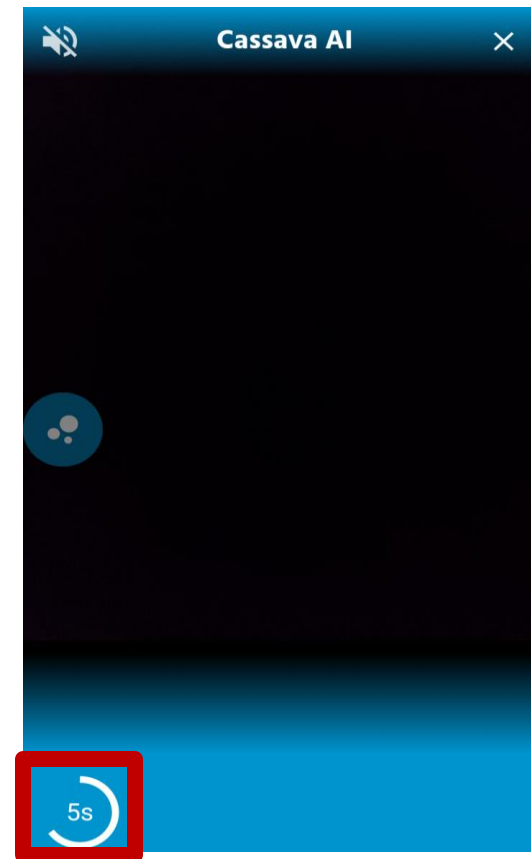
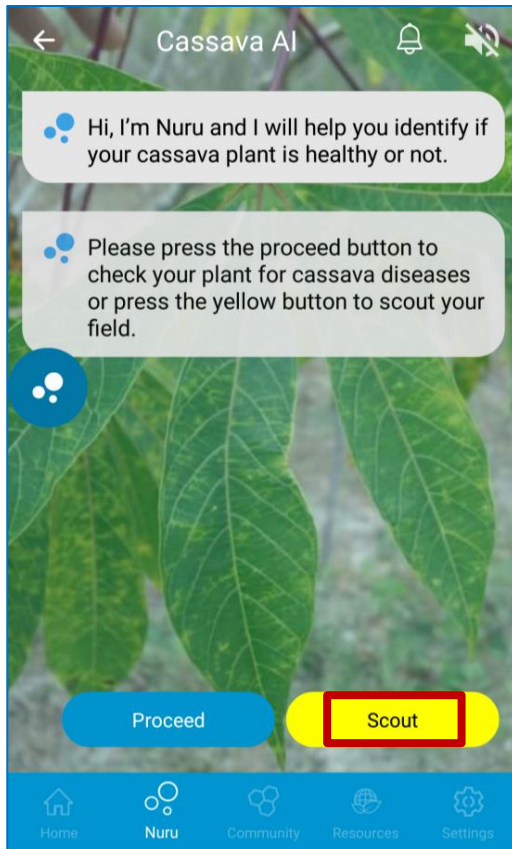
The connecting with SeedTracker requires you to be connected to the internet

6 LEAVES DIAGNOSIS

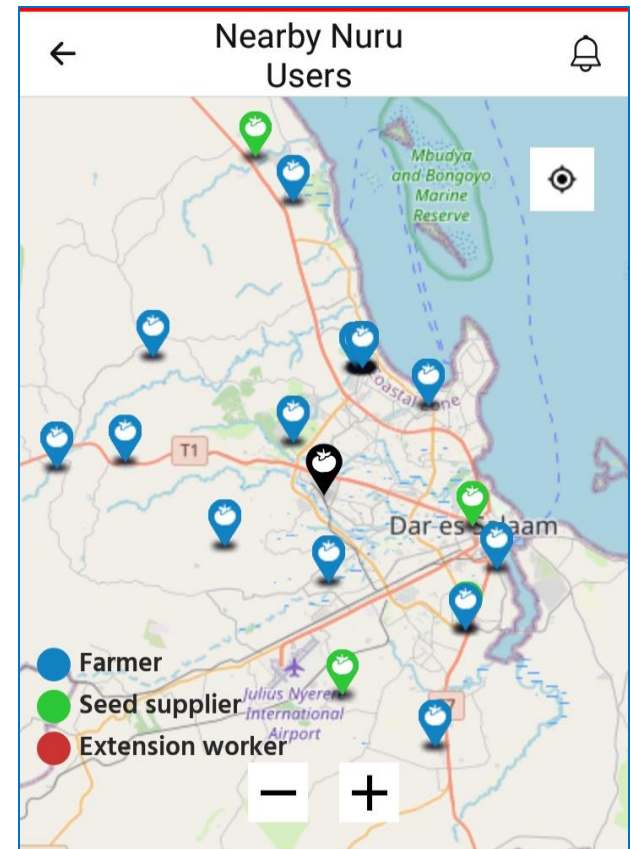
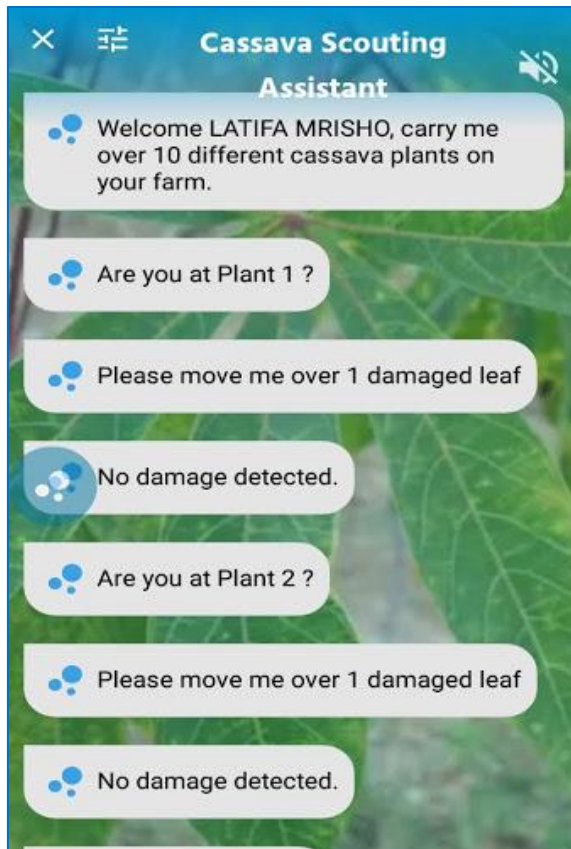


Cassava AI – Disease diagnosis

‘Field inspection’ option



Field inspection



Things to consider when using Nuru

Things to consider when using Nuru

1. Time

- Reflection of sunlight makes the leaves appear shiny and may lead to failure of diagnosis or misdiagnosis.
- Early morning (before 10 am) or late afternoon (after 4 pm)

2. Leaf selection

- Make sure you select leaves that appear to be unhealthy to give Nuru higher chances of identifying the diseases in your plant.
- Make sure the leaf is focused and you hold the phone steady during diagnosis (hold the leaf on your palm when necessary).

Things to consider when using Nuru

3. Disease type or severity

- Mild infections are not easily identified
- Bacterial infections, fungal infections and nutrient deficiencies can also not be identified



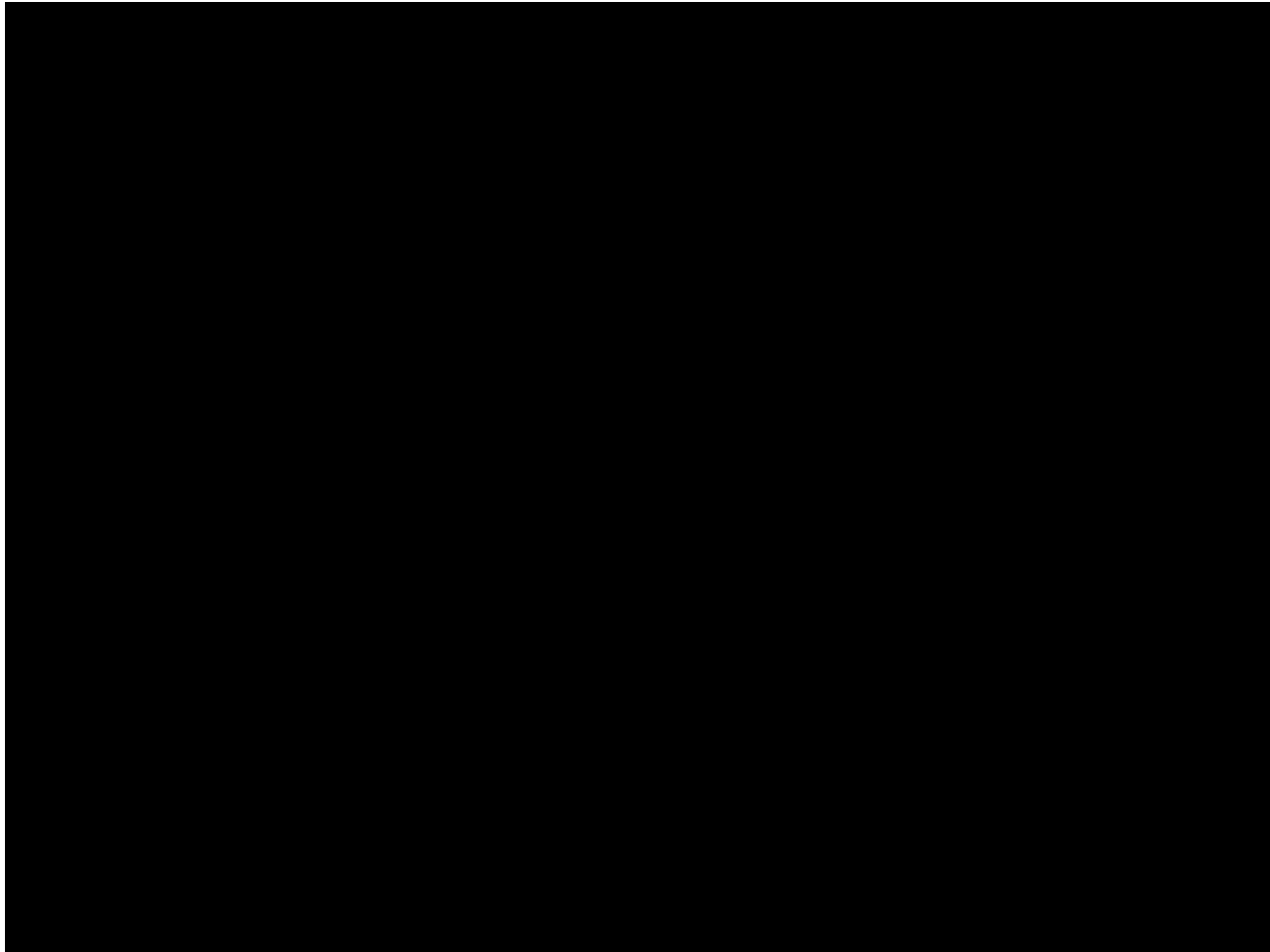
There is possibility of adding more diseases/conditions depends on availability of funds

Things to consider when using Nuru

4. Type of phone

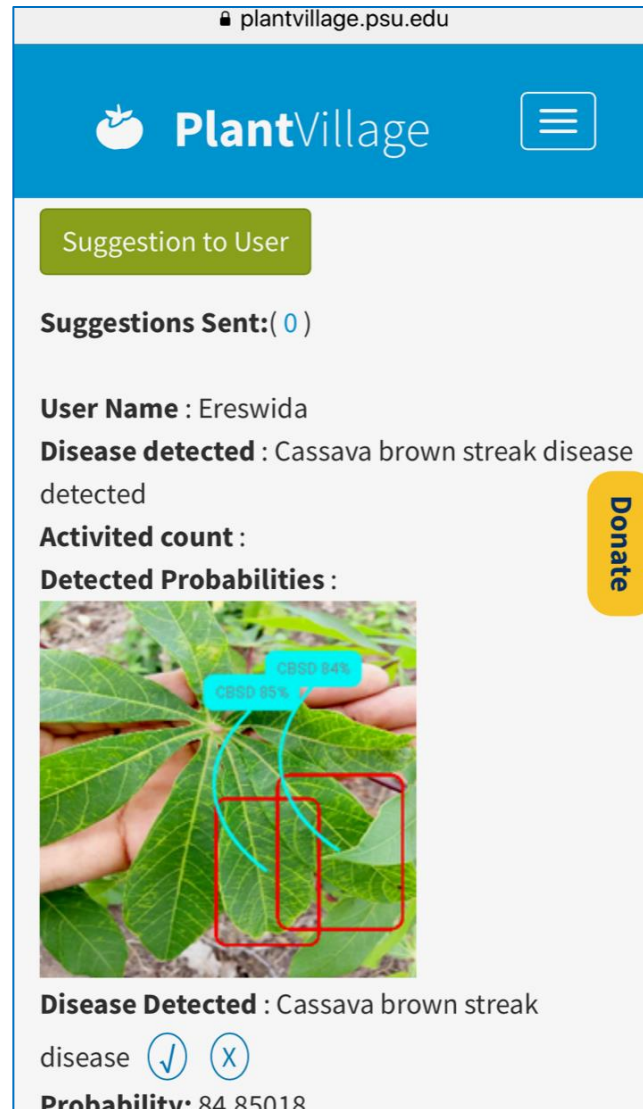
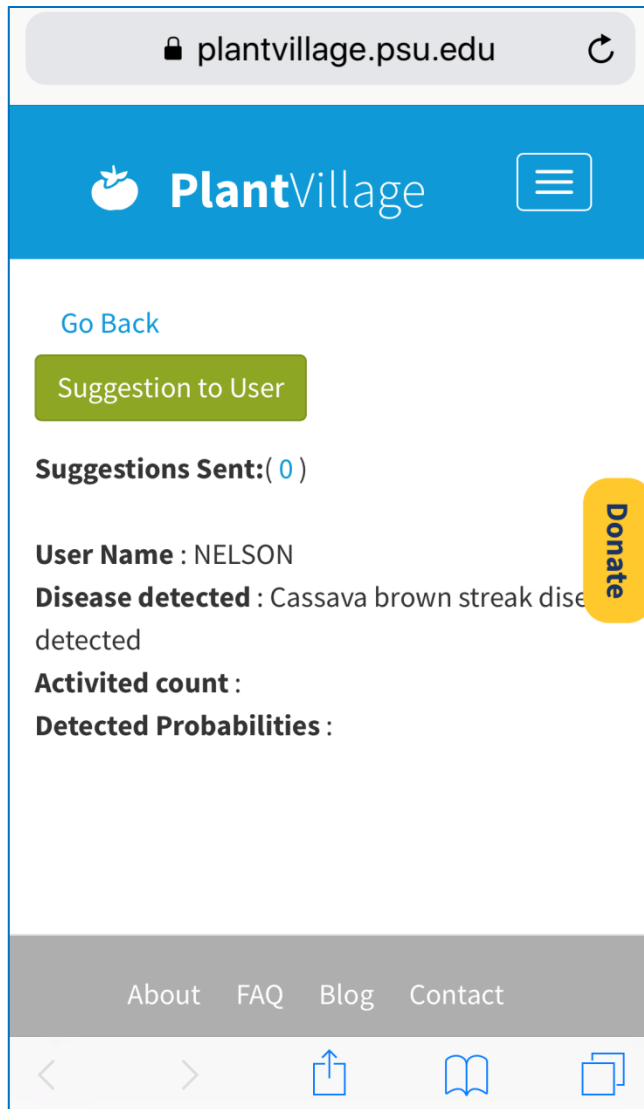
- Android phone \geq 2 GB RAM - Technology developments allows for smaller apps >> more affordable phones
- Sensitivity of the camera – Newer versions of smart phones tend to have more sensitive cameras (test the phones before purchasing bulk orders)
- Nuru is continuously being updated to account for the changes in phone capabilities

Things to consider when using Nuru



Diagnosis feedback

PLANTVILLAGE DATABASE



Cassava AI – Expert view



The images uploaded in the database are used to improve diagnostic capability of Nuru hence do your best to use Nuru while connected to the internet

Cassava AI – Expert view

PlantVillage

Detected Pest or Disease: Cassava Brown Streak Disease
(97,7,96,6,93,2,99,9,99,7,97,6,95,2,97,4)

Please select Disease:

Healthy
CBSD
CMD
Mites
Unknown

Bad Image

Update Diseases

Position : top_1

Image Upload Type : live

Activated Count : 3

Collected Location : Sassandra-Marahoué, Côte d'Ivoire

Collected Time :

Collected Latitude : 6.47572

Collected Longitude : -6.302488

Uploaded Latitude : 6.47572

Donate

PlantVillage

Cassava Images

Go Back

Send message about diagnosis to Mary ×

Content for suggestion

Thank you for using PlantVillage Nuru. We have looked at your image with our AI system in the cloud and with human experts.

[WE ADD TEXT]

Send message to user ⓘ

Select Suggestion Link ▾

Select Video Link ▾

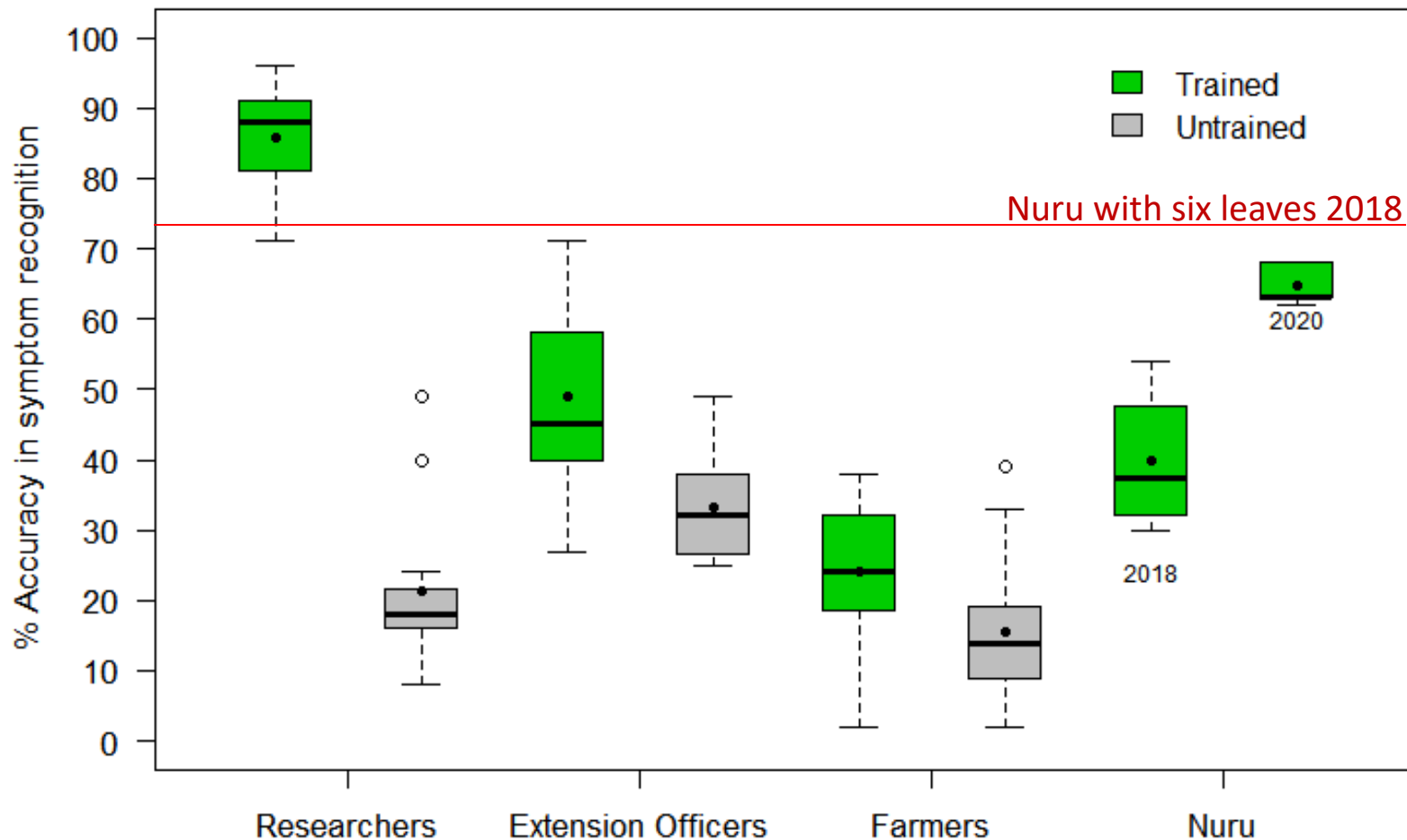
Wapor data last updated: 26 Sep 2020

Donate

Only possible if you use Nuru while connected to the Internet, so please opt for this method.

How effective is the cassava AI

Ability of different groups to identify symptoms of cassava diseases on leaves





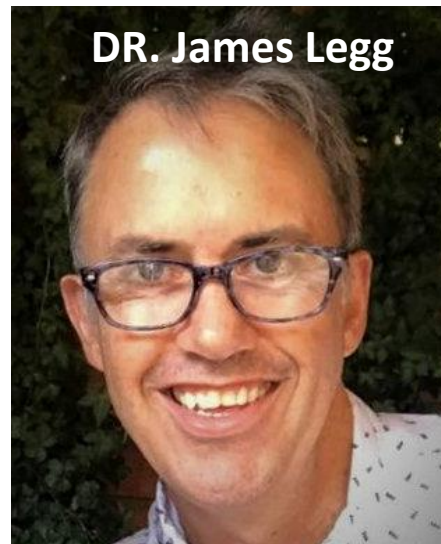
Platform for
Big Data
in Agriculture



Neema Mbilinyi &
Mathias Ndalawa



Prof. David Hughes



DR. James Legg



Thank you!

**For any question /clarification/comment
please contact**

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