Nuru for in-field Pest/Disease Diagnosis

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Résumé

PlantVillage Nuru is a smartphone app which uses artificial intelligence to deliver instant offline diagnosis of symptoms of major crop damage caused by diseases and pests. Its first application was for the cassava diseases/pests: cassava mosaic disease, cassava brown streak disease and cassava green mite. It can also be used to detect damage caused to maize by fall armyworm, and its capabilities are being expanded to other crops, including potato. It can be downloaded for free from Google's PlayStore. In addition to providing instant diagnoses, the app also links users to other nearby users and provides information on how to control the diseases/pests that it identifies. IITA has partnered in the development of the cassava part of the app with Penn State University, who are the primary authors.

Description Technique

PlantVillage Nuru uses machine learning with object recognition to train software to 'recognize' the characteristics of symptoms caused by diseases and pests. In order to achieve this, thousands of digital images of the different categories of disease infection, pest damage or healthy status are annotated by technical experts. The object recognition software has been incorporated into an Android app that can be downloaded and used even on basic specification smartphones. Crowd-sourced translation has been used to provide translations into several languages, augmented by additional translations from technical experts. IITA has worked with the PlantVillage team to deliver the Swahili translation. The back-end of the software allows for post-event analysis of diagnosis reports received from users. These are maintained in a database and are used to generate real-time maps.

Utilisation

In-field diagnosis of crop pests and disease types and delivery of relevant control advice to users via their smartphones

Composition

No specific composition required

Moyens d'Application

This solution is applied by downloading the PlantVillage Nuru app for free from Google's PlayStore. Usage can be enhanced by awareness raising and training of farmers and extension officers. This has been done extensively in Kenya and Tanzania.

Agroécologies	Tous les Agroécologies.
Régions	Tous les Régions.
Developed in Countries	Tous les Pays, le Kenya, le Tanzanie.
Available in	Tous les Pays.
Forme(s) de la Solution	Application Numérique.
Application(s) de la Solution	Lutte contre les Insectes, Contrôle des Maladies, Autre Lutte Antiparasitaire.
Denrées Agricoles	le Maïs, le Manioc, Autres Racines & Tubercules.
Bénéficiaires Cibles	Tous Agriculteurs.

Commercialisation

Catégorie de Commercialisation

Technologie de gestion avec un potentiel commercial limité

Exigences de Démarrage

Nothing other than downloading from Google's PlayStore

Coût de Production

Nothing, apart from possible facilitation through provision of phones and training/ awareness raising

Segmentation de la Clientèle

Primarily smallholder farmers, but also the extension officers, seed certification officers and other agric workers dealing with crops in the field.

Rentabilité Potentielle

This is being rolled out as a public good with no aim to generate profit.

Exigences de Licence

The app can be freely downloaded and used with no licensing requirements.

Solution en tant que Bien Public

Yes. A public good for the benefit of smallholder farmers and the agric workers who support them.

Institutions

Accompanying Solutions

PlantVillage Nuru becomes most effective when used in combination with SeedTracker, which is an IITA app for the registration and certification of seed which can also be used to enhance seed marketing. When Nuru makes a diagnosis of a cassava disease, it recommends users to obtain healthy planting material of disease-resistant varieties from producers registered on the SeedTracker app. Currently, SeedTracker has been rolled out for cassava in Nigeria and Tanzania, but new countries and crops are being added.