



International Institute for
Applied Systems Analysis
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science for global insight

Farmer apps with a two way communication platform

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IIASA, International Institute for Applied Systems Analysis

How can we collect more ground reference data

- ▶ Get data from existing archives both visual interpretation and ground data
- ▶ Harmonization and standards play an important role, e.g. protocols
- ▶ Some ground data exists but is fragmented GOFC-GOLD – validation, Geo-wiki points, Earth collect, Laco-wiki (Geo-wiki)
- ▶ Tap into data from companies e.g. GODAN
- ▶ Companies evolve making money with services for farmers e.g. Geotraceability, insurances, Landmap
- ▶ Crowdsource the data, build tools for visual interpretation and direct ground data collection – demo tools/apps (Seca-wiki, Cimmyt app, Prosopis app) and LandSense project



EVENT

Ministerial Conference on Global Open data for... →



BLOG

Why anonymisation of farm data is important when... →



godan
Global Open Data
for Agriculture & Nutrition

**INVITATION
TO EUROPE'S LARGEST
EXHIBITION AND
CONFERENCE SHOWCASING
SUSTAINABLE AGRICULTURE
TECHNOLOGY**

GODAN is exhibiting at GFIA Europe 2017. We invite you to visit our stand A36

Whether you want to improve productivity, increase profits, or overcome the challenges of climate change, find hundreds of exciting products to help your business remain competitive and sustainable for the long-term.



NEWS

GODAN taking part in GFIA Europe 2017 →

Become a partner and help support global efforts to make agricultural and nutritionally relevant data globally available and unrestricted.

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Citizen based Environmental Data collection

Technology



Mobile Phones
Mobile Money

In-Situ



Interested Citizens
Existing Communities

Value Added



Improved
Land Cover data



Reliable statistics
Land-use change

How can we make optimal use of the crowd?

Expert

Crowd

Treated Crowd

Increasing Quality



1. Laco-wiki Logging in / Languages

The screenshot displays the LACO-Wiki website interface. At the top, the browser address bar shows the URL <https://laco-wiki.net/en/Account/Login?returnUrl=%2Fen%2FWelcome>. The main header features the LACO-Wiki logo and the tagline "The Land Cover Validation Platform". A navigation menu below the header includes links for Home, Data, Samples, Validations, and Reports. The central content area is titled "Login" and contains a prominent "Login to LACO-Wiki" button. Below this, a message states: "To enjoy the benefits of validated landcover datasets you have to login with one of the following Accounts:". Three social media login options are presented: GEO-Wiki, Facebook, and Google. The footer is divided into three sections: "Stay In Touch" with links for email, Facebook, and Twitter; "Project Members" featuring logos for IITASA and GeoVille; and "Languages" listing 11 supported languages with their respective flags: English, Deutsch, Français, Español, Italiano, Português, Русский, Українська, Ελληνικά, Türkçe, and Český.

LACO-Wiki

The Land Cover Validation Platform

Home | Data | Samples | Validations | Reports

Welcome to LACO-Wiki | Create and manage data | Generate your validation samples | Interpret your samples | View your validation results

Hello geolms (Logout)

Validation Session Details

Go to Validation Session Overview

Basic Information

Owner: geolms (you)
Validation Session Name: Sample for Comparison
Associated Dataset: Kenya Globcover30
Associated Sample: Main sample Kenya GL30
Created: Friday, April 21, 2017 6:52 AM
Validation Method: Blind

Validation Session Description

This is sample so we can look at the images

Reports based on this validation session

You haven't created any reports based on this validation session yet. You can create a new report here.

Sharing

Shared validation sessions can be validated and used by other users to create reports.

Share with users or groups...

Validation Progress

499 of 500 samples have been validated.

Progress: 99.8 %

Continue Validation

Validation Download

Download your validations.

ESRI Shapefile | KMZ File

← Sharing feature

← Progress bar

← Validation download

Overview

- ▶ Upload
- ▶ Sampling
- ▶ Validation
- ▶ Reporting



Dataset Details

Basic Information

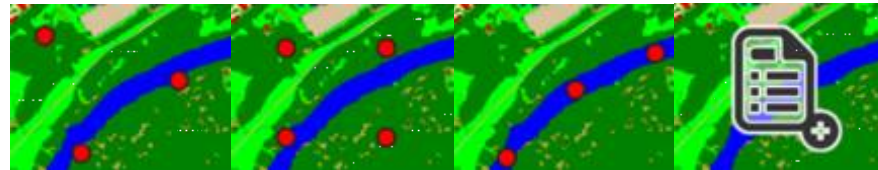
Dataset Name: LCZ Map of Dublin
 Dataset Type: Raster
 Land Cover Type: Categorical
 Uploaded: September 29, 2015 8:40 PM

Dataset Description

This is a Local Climate Zone (LCZ) map of Dublin, which was created using Landsat and other input datasets.

Raster Details

Raster Type: System.Byte
 Extent: [-6.56213136959318 53.187245190463024



Classification:

Trees (9)

Correct

Incorrect

	Buildings (1)	Other constructed area (2)	Area (3)	Forest (4)	Barren (5)	Surface water (6)	Snow (7)	Ice (8)	Forest (9)	Barren (10)	Shrub (11)	Dwarf shrubs (12)	Herbaceous vegetation (13)	Wet (14)	Water (15)	Clouds (16)	Water Total	User Accuracy	
Buildings (1)	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	100%
Other constructed area (2)	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	100%
Area (3)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0%
Forest (4)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0%
Barren (5)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0%
Surface water (6)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0%
Snow (7)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0%
Ice (8)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0%
Forest (9)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0%
Barren (10)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0%
Shrub (11)	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	100%
Dwarf shrubs (12)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0%
Herbaceous vegetation (13)	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	100%
Wet (14)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0%
Water (15)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0%
Clouds (16)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0%
Column Total	1	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0%
Rowwise Accuracy	100.0%	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	100.0%
Matrix Accuracy	75.0%	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	100.0%
Allocation/Disagreement	0.00007																		
AMB	1.241119																		
Steps	1.01815																		
Overall Accuracy	0.7																		
Quantity Disagreement	0.21813																		

Accuracy Assessment

- ▶ Raw data / confusion matrix
- ▶ Overall accuracy / errors of omission and commission
- ▶ Kappa
- ▶ Average Mutual Information (AMI)
- ▶ Quantitative and Allocation Disagreement (Pontius and Millones, 2011)
- ▶ We can add others based on user needs

In-situ component – LACO-Wiki Mobile

Based on the idea of FotoQuestGo



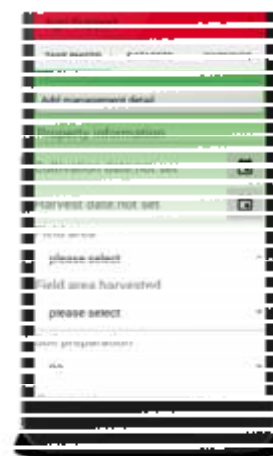
N 13.7 W  0.08km



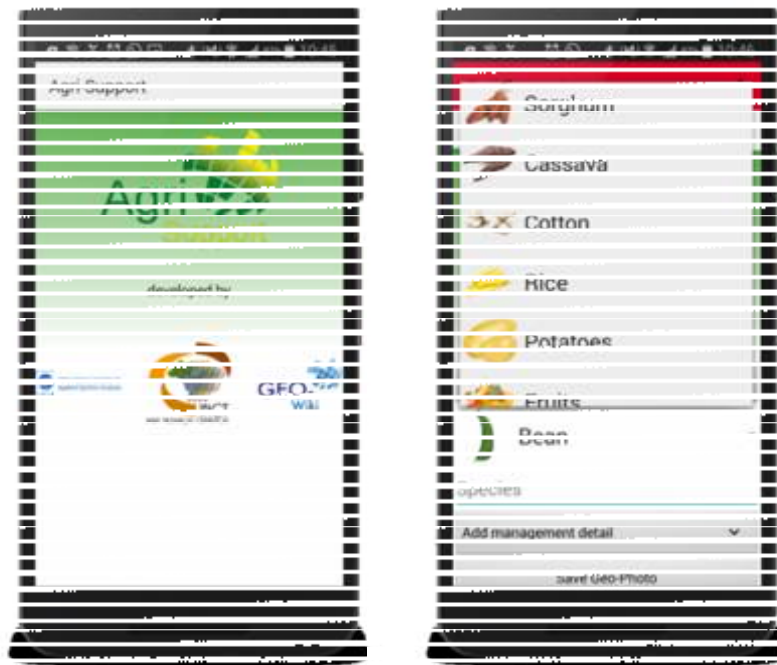
2. SECA-wiki app for

- ▶ Centro Nacional de Monitoramento e Alertas de Desastres Naturais

Seca-Wiki Smartphone Application



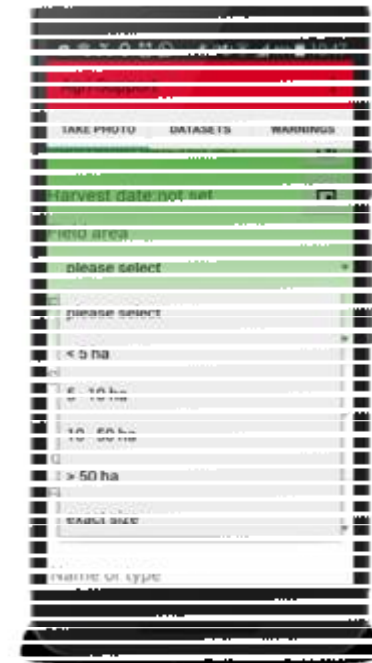
App details and data



Users take pictures geo-tagged, showing compass direction and tilt of the phone. The user can enter further information such as the crop type.

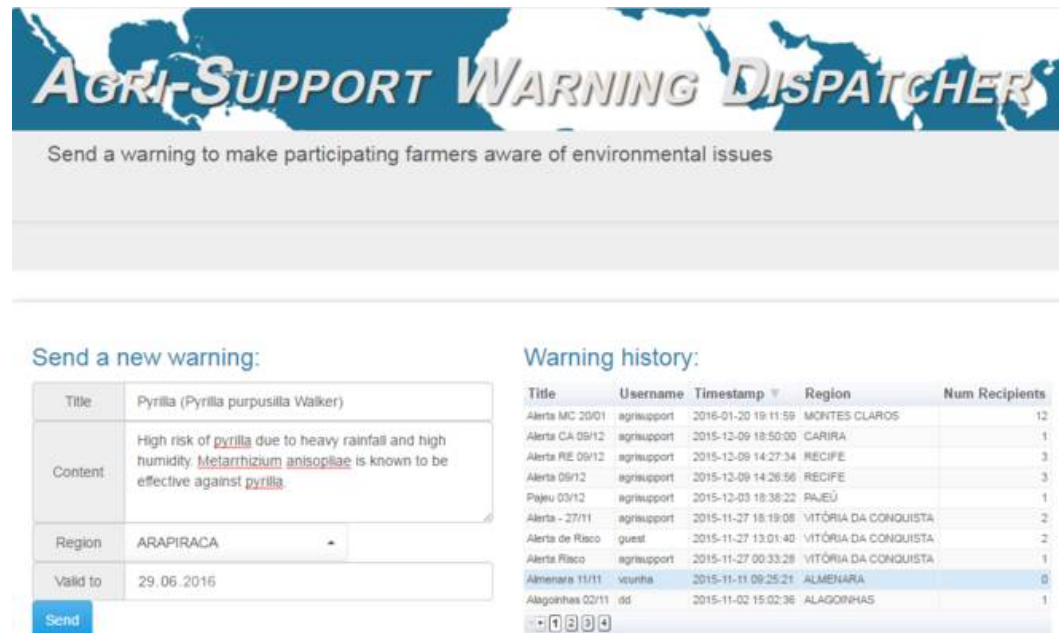
App details and data

Users can enter detailed information on the cultivation and harvest dates, field size, fertilizer and soil preparation, plant and seed information as well as information on pests and diseases.



Seca-Wiki Warning Dispatcher

Administrators of the website can use the warning dispatcher to issue warnings for impending events. These warnings are issued on a regional level. The users of the smartphone application can choose for which regions they want to receive warnings for. Once subscribed to the service the user will be notified of any warnings for the chosen regions also when they don't open the app.



Send a new warning:

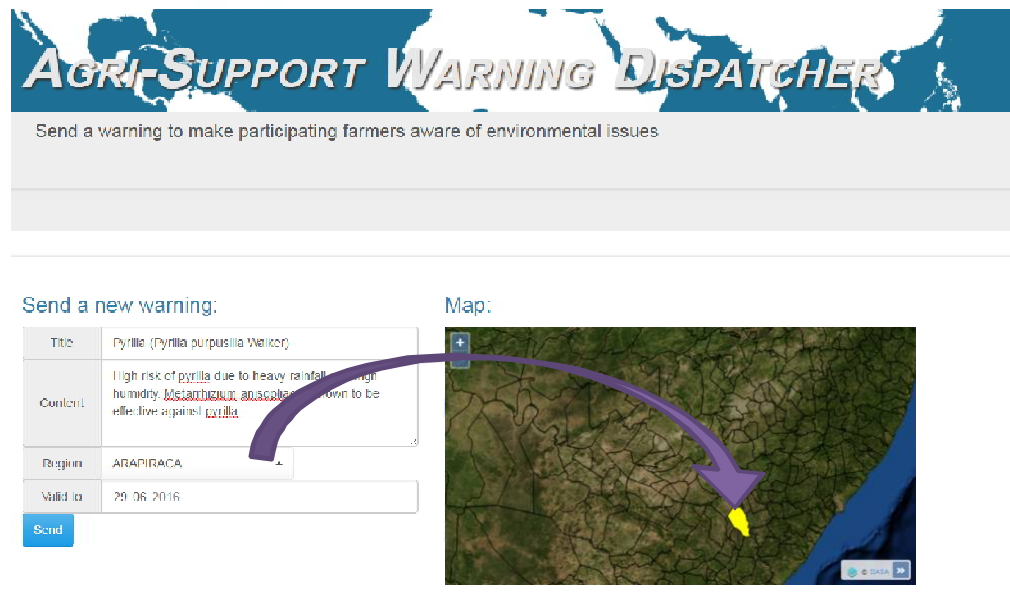
Title	Pyrilla (Pyrilla purpusilla Walker)
Content	High risk of pyrilla due to heavy rainfall and high humidity. Metarrhizium anisopliae is known to be effective against pyrilla .
Region	ARAPIRACA
Valid to	29.06.2016

Warning history:

Title	Username	Timestamp	Region	Num Recipients
Alerta MC 20/01	agrisupport	2016-01-20 19:11:59	MONTE CLAROS	12
Alerta CA 09/12	agrisupport	2015-12-09 18:50:00	CARIRA	1
Alerta RE 09/12	agrisupport	2015-12-09 14:27:34	RECIFE	3
Alerta OR/12	agrisupport	2015-12-09 14:26:56	RECIFE	3
Pajeu 03/12	agrisupport	2015-12-03 18:38:22	PAJEU	1
Alerta - 27/11	agrisupport	2015-11-27 18:19:08	VITÓRIA DA CONQUISTA	2
Alerta de Risco	guest	2015-11-27 13:01:40	VITÓRIA DA CONQUISTA	2
Alerta Risco	agrisupport	2015-11-27 00:33:28	VITÓRIA DA CONQUISTA	1
Almenara 11/11	vcunha	2015-11-11 09:25:21	ALMENARA	0
Alagoinhas 02/11	sd	2015-11-02 15:02:36	ALAGOINHAS	1

Warning Dispatcher and map view

The map in the warning dispatcher shows the region for which the warning will be issued. Every user which chose to receive warnings for the selected region will receive the information on the smartphone also when the app is not opened.



AGRI-SUPPORT WARNING DISPATCHER


Send a warning to make participating farmers aware of environmental issues

Send a new warning:

Title	Pythia (Pythia purpusilla Walker)
Content	High risk of pythia due to heavy rainfall, high humidity. <i>Mastomys</i> , <i>atoscolus</i> known to be effective against <i>pythia</i> .
Region	ARAPIRACA
Validity	29/06/2016

Send

Map:



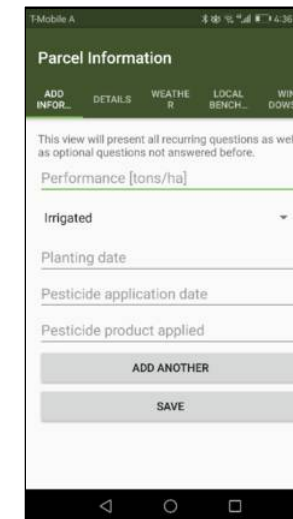
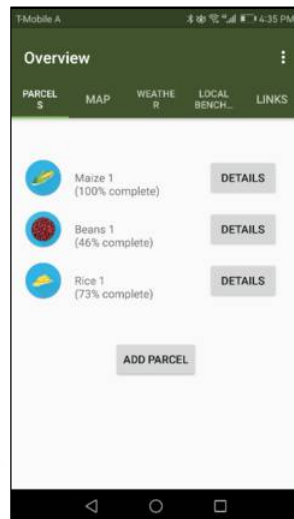
3. CIMMYT colaboration project

Sustainable intensification in Mexico through crowdsourcing



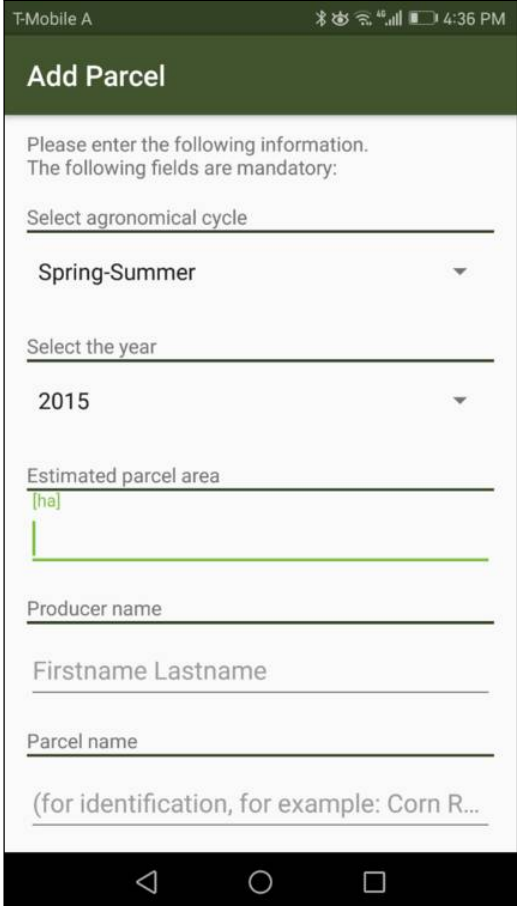
Concept

IIASA supports the efforts that CIMMYT is currently undertaking in Mexico to promote agricultural sustainable intensification by building a farmers' crowdsourcing app.



App details and data

- ▶ The app allows a farmer to log agronomically relevant information such as crop management practices and yield performance
- ▶ It uses geo-location to provide information on parcel location.



The screenshot shows a mobile application interface titled "Add Parcel". At the top, the status bar displays "T-Mobile A" and the time "4:36 PM". The app header is dark green with the title "Add Parcel" in white. Below the header, a message reads: "Please enter the following information. The following fields are mandatory:". The form consists of several input fields:

- "Select agronomical cycle" with a dropdown menu showing "Spring-Summer".
- "Select the year" with a dropdown menu showing "2015".
- "Estimated parcel area" with a text input field containing "[ha]".
- "Producer name" with a text input field containing "Firstname Lastname".
- "Parcel name" with a text input field containing "(for identification, for example: Corn R...".

The bottom of the screen shows the standard Android navigation bar with back, home, and recent apps buttons.

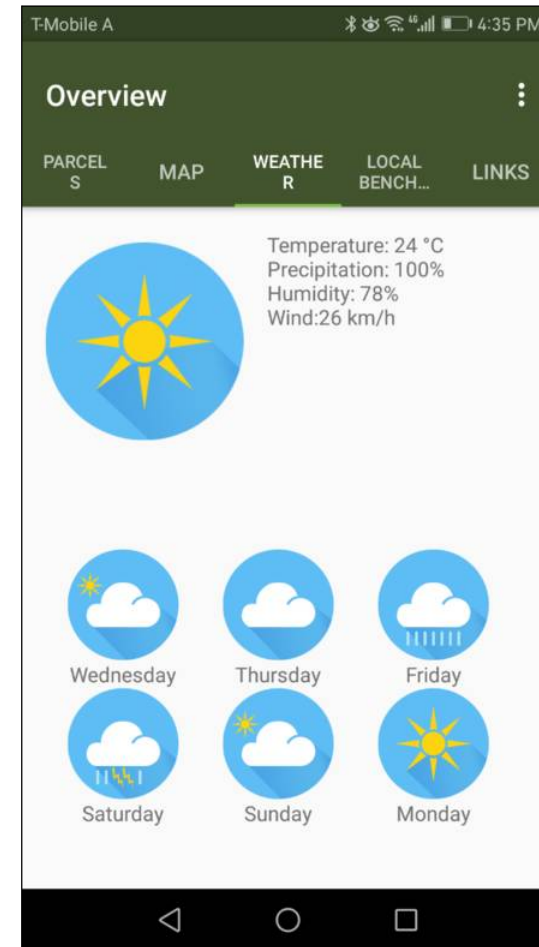
App details and data



Farmers have in return access to benchmarking local information based on previous performance of nearby parcels or areas with similar conditions extracted from CIMMYT database

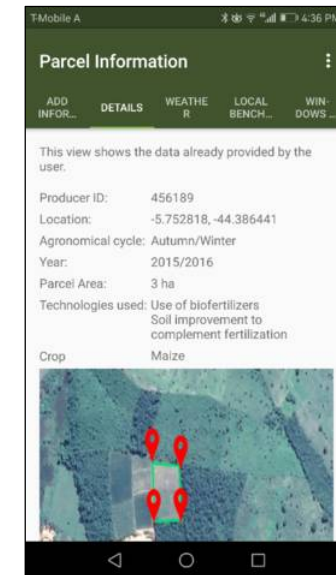
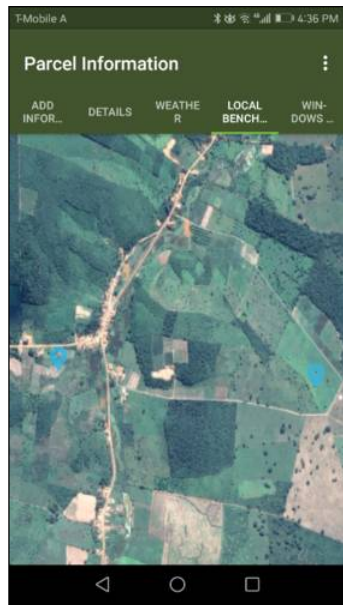
App details and data

Additionally, farmers get local historical weather information and forecasts as well as timely agronomical recommendations (windows of opportunity) e.g. fertilizer/pesticide application optimal time



Future plans

Local EPIC model recommendations: Updated crop model simulations using accurate parameters based on local measurements



Financial and market benchmarking:
Local prices and recommended opportunities using market information to aid decision making

App 4. Prosopis app



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JRC

EUROPEAN COMMISSION



Somalia Water and Land Information Management
(SWALIM) Project

**Scaling up the detection of
Prosopis Juliflora invasive species
in Somalia through Crowdsourcing**

From

Ugo Leonardo



IIASA, International Institute for Applied Systems Analysis