



Food and Agriculture  
Organization of the  
United Nations



International  
Plant Protection  
Convention

# 3. APP Data collection and management

## Africa Phytosanitary Programme



Descartes Koumba IPCC Secretariat

**(APP) Phase 2 · Train-the-Trainer workshop**  
**23–27 June 2025 · Mpumalanga, South Africa**

**Co-organized by:**



**Funded by:**



# Program Overview

## Purpose

The African Phytosanitary Program (APP) produces geospatial products and provides training support for **plant health monitoring** initiatives across Africa.

APP tools enable standardized data collection for pest surveillance and monitoring.

## Technical Approach

APP system combines mobile applications for **field data collection** with web-based tools for **data management and analysis**, creating a comprehensive ecosystem for phytosanitary **monitoring and reporting**.

The **geospatial tools** developed for this program enable **standardized data collection protocols** across different regions, ensuring consistency in monitoring efforts.

They provide a foundation for evidence-based decision making in plant health management across participating countries.

# Mobile Data Collection Overview



## ArcGIS Field Maps

Used to record site locations by referencing base maps and entering site names

## Data Synchronization

Syncs collected data with central database when connectivity is restored



## ArcGIS Survey123

Used to complete detailed surveys with site-specific information

## Offline Capability

Both applications support working without internet connection in remote areas

Data collection for the Africa Phytosanitary Programme follows a two-step process.

First, users open ArcGIS Field Maps to record site locations by referencing the base map.

Then, they access ArcGIS Survey123 through a link provided in Field Maps to complete detailed surveys.

This workflow ensures accurate geolocation of each data point while capturing comprehensive site information.

# Installing Mobile Applications



## Check Device Requirements

Ensure you have a mobile device (iOS or Android) with sufficient storage space and a working Wi-Fi connection for the initial setup.

## Download Applications

Visit the App Store (iOS) or Google Play Store (Android) and search for "ArcGIS Field Maps" and "ArcGIS Survey123." Both applications are available for free download.

## Install Applications

Tap "Install" or "Get" for both applications and wait for the installation to complete. The app icons will appear on your device's home screen once installed.

The ArcGIS Field Maps and ArcGIS Survey123 applications should be pre-installed on your mobile device before heading to the field. If they're not already installed, follow the steps above to get them set up. These applications form the foundation of your mobile data collection toolkit for the Africa Phytosanitary Program.

# Signing in to ArcGIS Online

## Open ArcGIS Field Maps



Locate and tap the ArcGIS Field Maps application icon on your device to launch the app

## Select Sign-in Option



On the sign-in screen, tap "Sign in with ArcGIS Online" from the available options

## Enter Credentials



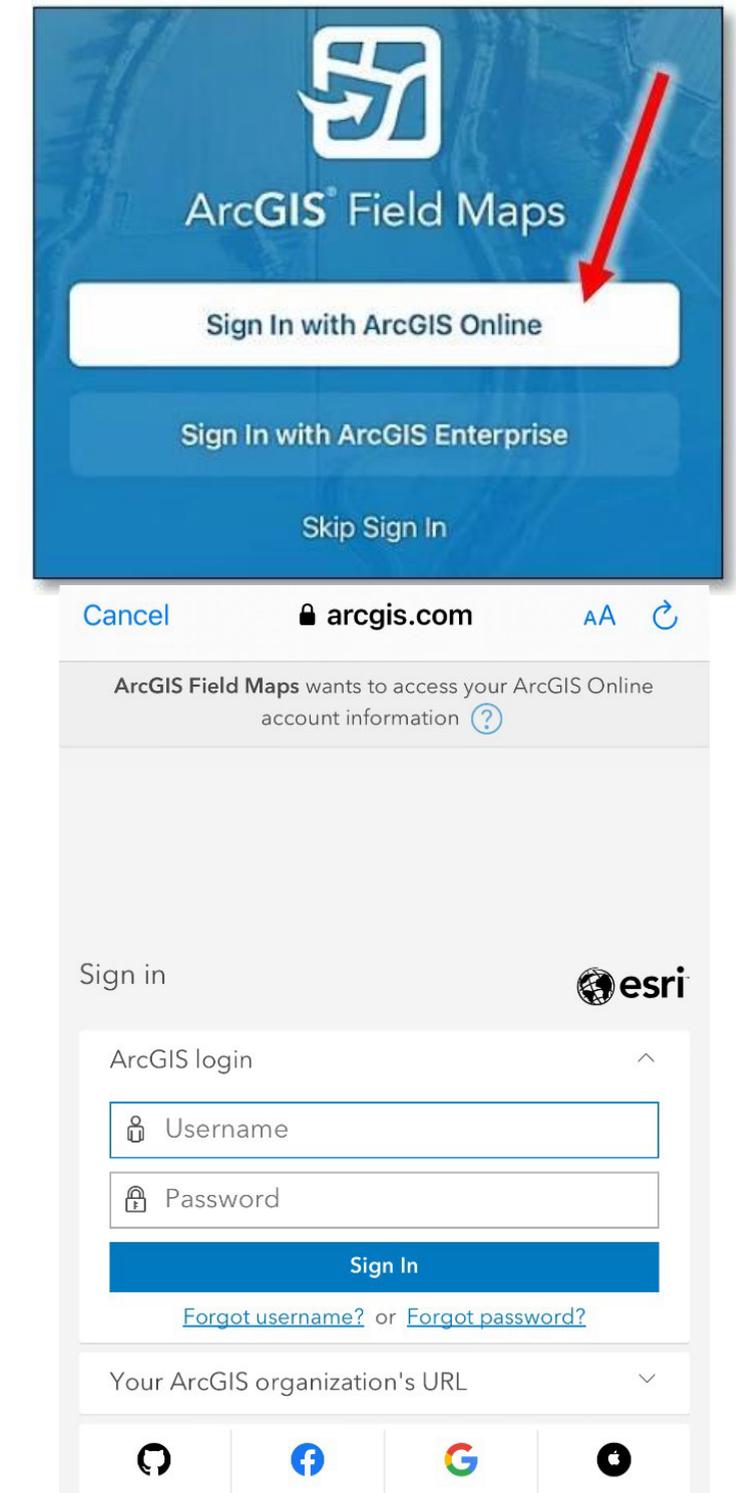
Enter the username and password provided by your organization

## Complete Authentication



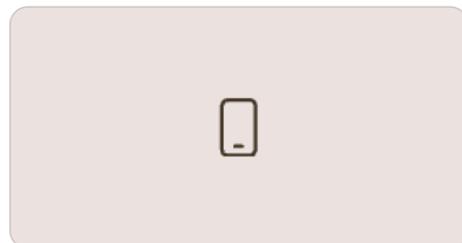
Tap "Sign In" to authenticate your account and access the maps shared with you

- You must sign into **ArcGIS Online** to access maps shared with your user account.
- A **Wi-Fi connection** and an approved **user account in the ArcGIS Online** environment are required for the initial sign-in.
- Once signed in, **ArcGIS Field Maps** will retain your credentials for offline data collection in the field.



# Signing in to ArcGIS Survey123

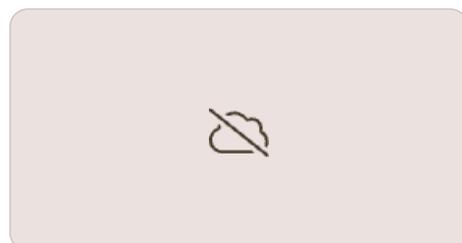
## Launch Survey123



Locate and tap the **ArcGIS Survey123** app icon on your device



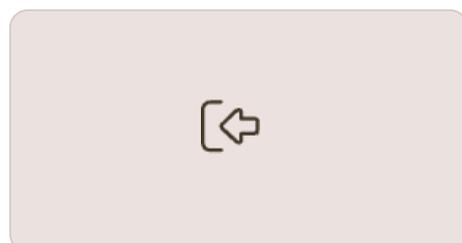
## Select Sign-in Option



Choose "Sign in with ArcGIS Online" from the available options



## Enter Credentials



Use the same **username and password** as ArcGIS Field Maps

After signing in to ArcGIS Field Maps, you'll need to sign in to ArcGIS Survey123 using the **same credentials**.

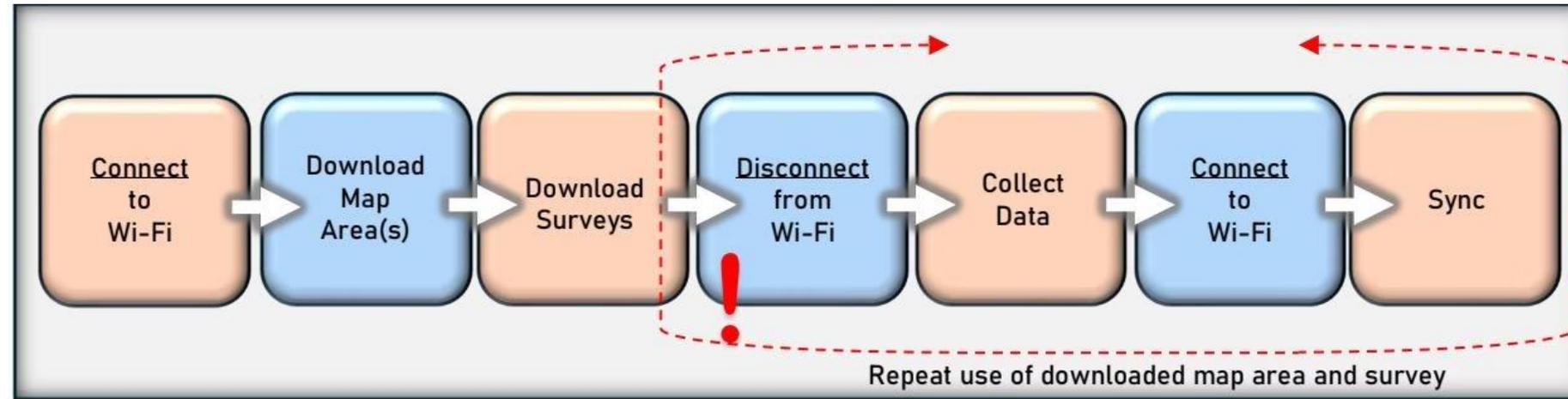
A Wi-Fi connection is required for this **initial authentication**.

The sign-in process for Survey123 is similar to Field Maps, requiring your organization-provided username and password.

Once you've **successfully signed in to both applications**, you're ready to download the necessary map areas and surveys for offline use in the field.

This **two-step authentication** ensures secure access to your organization's data collection tools.

# Understanding offline workflows

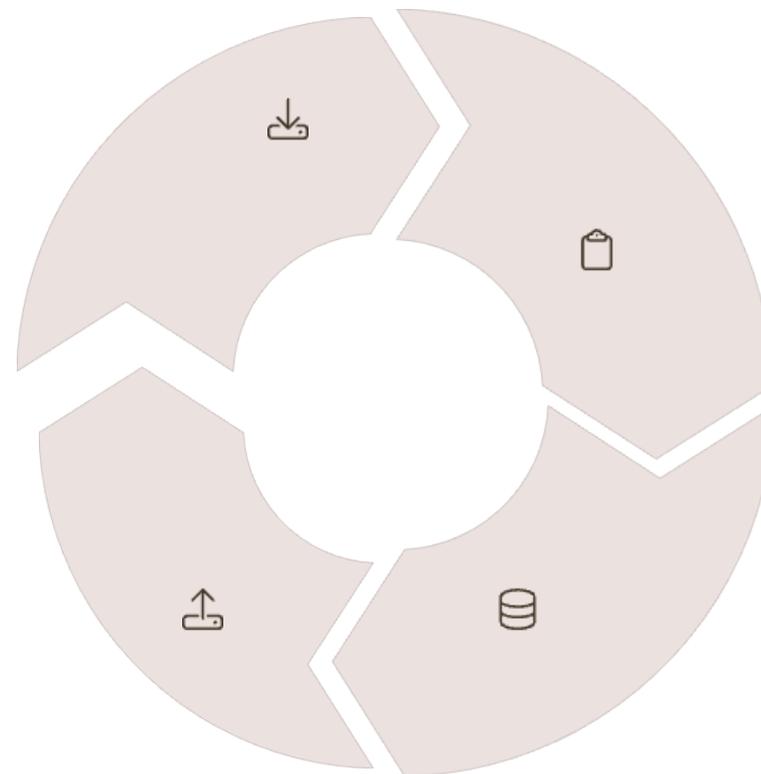


## Download

Connect to Wi-Fi and download map areas and surveys to your device

## Synchronize

Reconnect to Wi-Fi and sync your collected data with ArcGIS Online



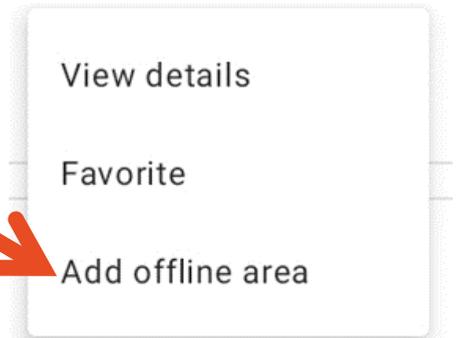
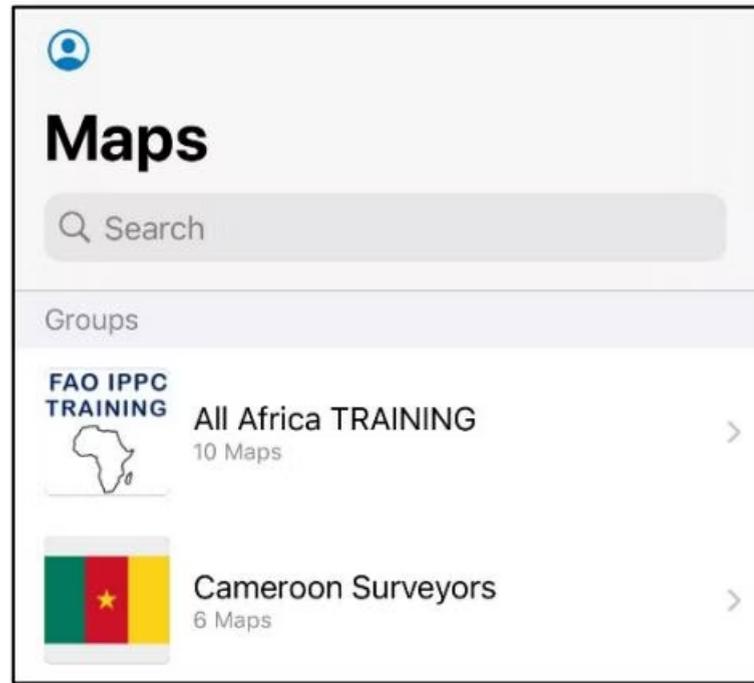
## Collect

Disconnect from Wi-Fi and collect field data using the downloaded resources

## Store

Data is stored locally on your device until you reconnect to Wi-Fi

# Downloading map areas in Field Maps

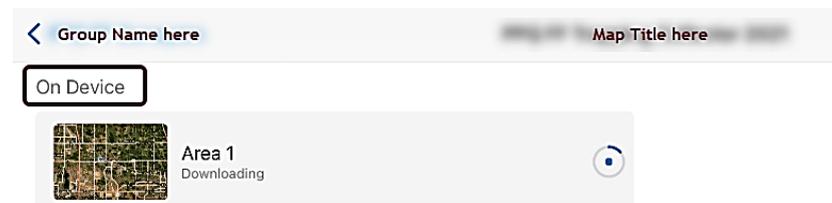


## Locate Your Map

From the Maps landing page, locate the map you need in your groups or use the search bar to find it by name

## Set Detail Level

Change the level of detail from "Room" to "Streets" or "Neighborhood" for appropriate field survey detail

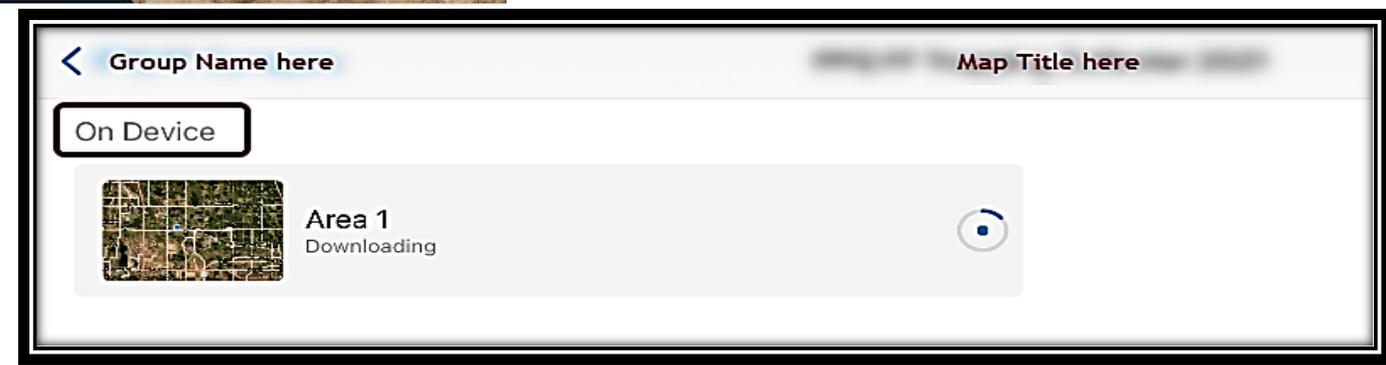
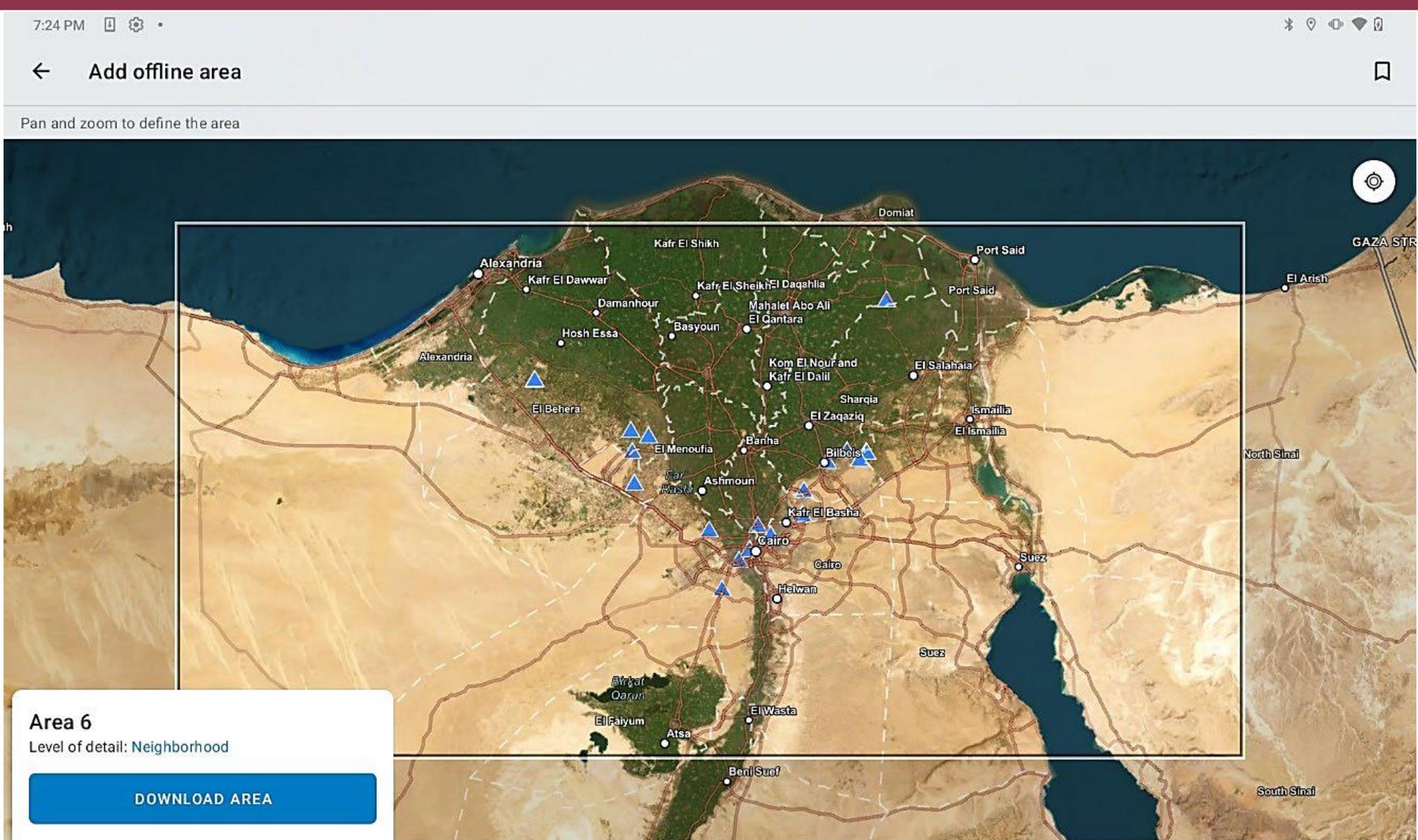


## Access Offline Options

Tap the three blue dots (overflow menu) on the map card and select "Add Offline Area"

## Download the Area

Adjust the map extent to cover your survey area and tap "Download Area" to save it to your device

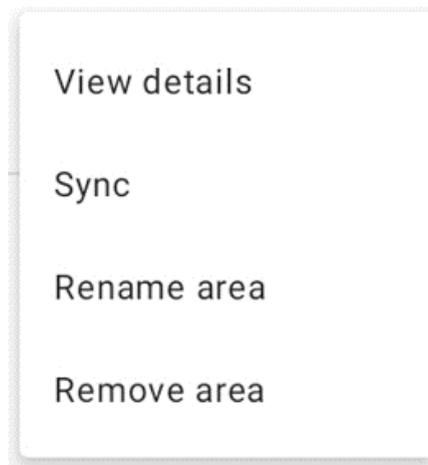


# Managing downloaded Map Areas



## Rename Map Areas

After downloading, rename your map areas using the naming convention established by your supervisor. Tap the overflow menu (three dots) on the map area card and select "Rename area."



## Verify Coverage

Open and review the downloaded area to ensure it meets your survey needs. Check that the level of detail is sufficient and that the area covers your entire survey region.



## Remove If Necessary

If the downloaded area doesn't meet your needs, you can remove it and start again. Tap the overflow menu and select "Remove area" to delete it from your device.

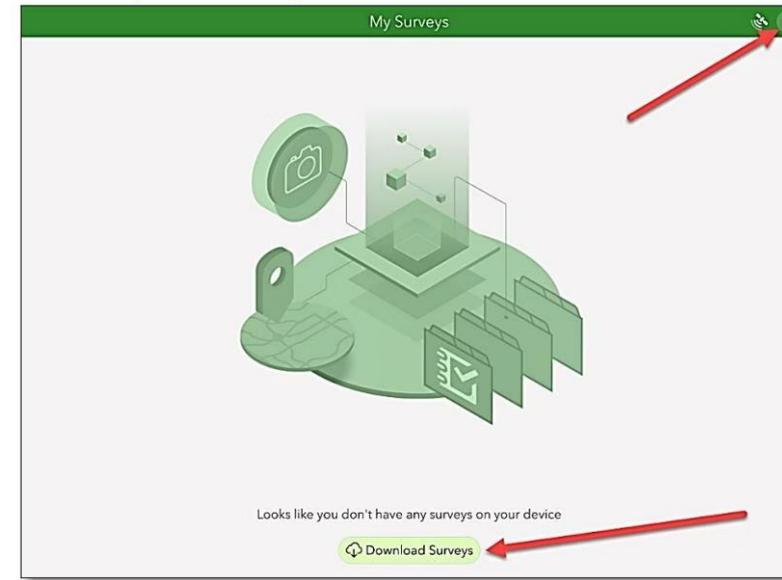


## Download Multiple Areas

If necessary, you can download multiple map areas to cover your entire survey region. Repeat the download process for each area you need.

Proper management of your downloaded map areas ensures you have the right data available when you need it in the field. It's recommended to organize your map areas with clear, descriptive names that follow your organization's naming conventions. This makes it easier to identify the correct map area when conducting surveys across multiple locations.

# Downloading surveys in Survey123



## Profile Access

Tap the profile icon in the top right corner of the Survey123 app



## Download Button

Alternatively, tap the "Download Surveys" button at the bottom of the screen



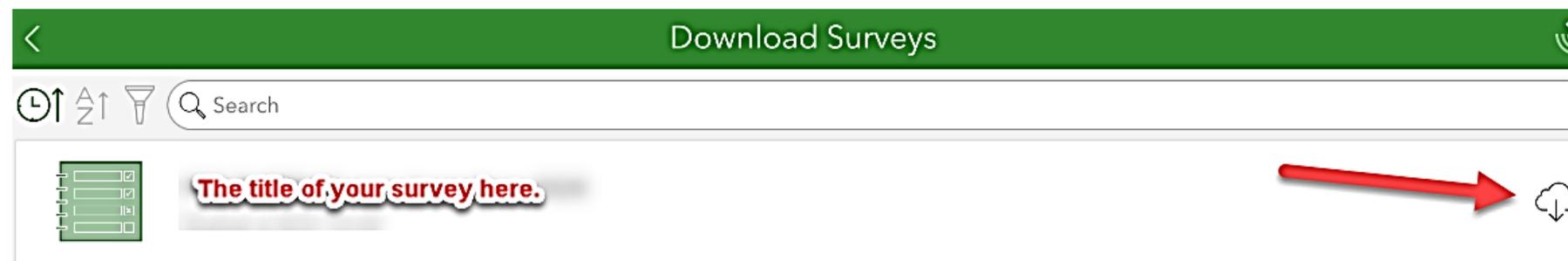
## Cloud Download

Select the cloud icon next to your survey title to begin downloading



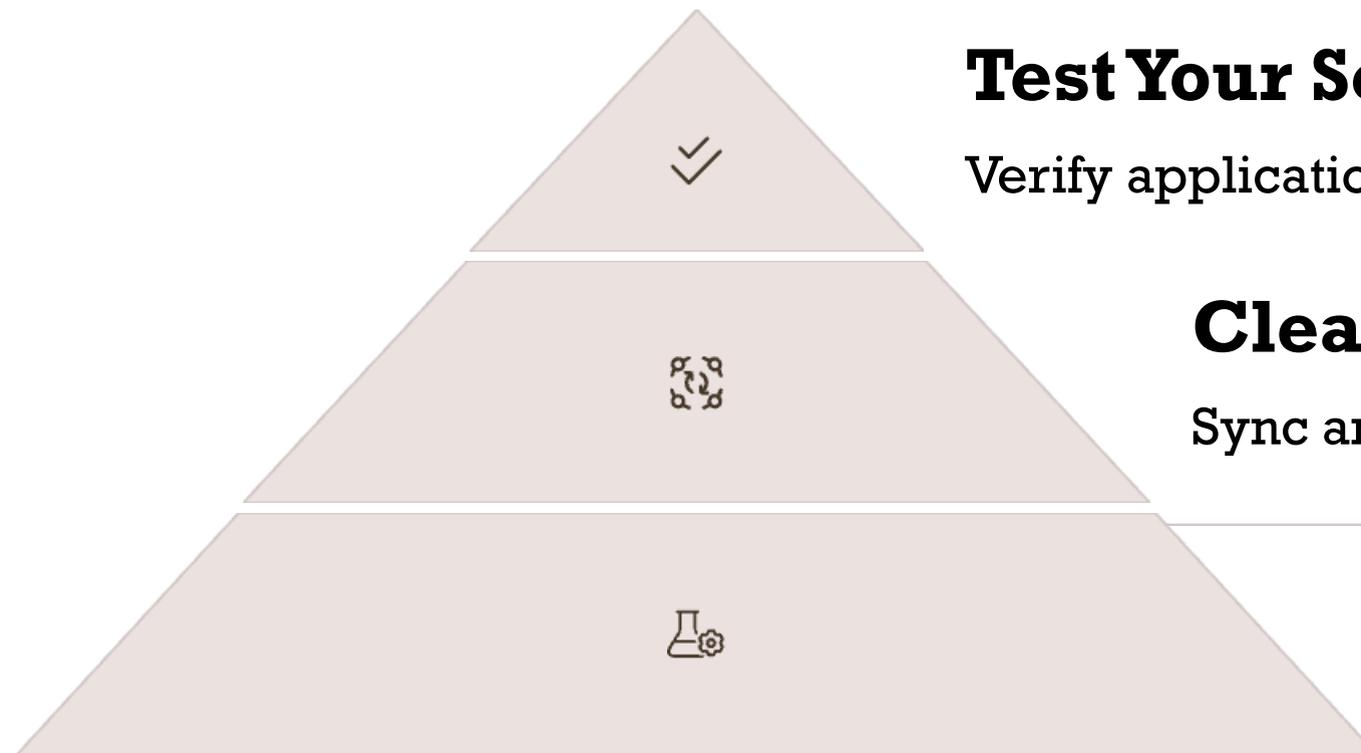
## Return to List

After downloading, tap the back arrow to return to "My Surveys"



After downloading your map areas in Field Maps, you need to download the corresponding surveys in Survey123. This ensures that you have all the necessary forms available for data collection when working offline.

# Preparing for field work



## **Test Your Setup**

Verify applications and downloaded resources before leaving

## **Clear Pending Data**

Sync any unsent surveys and map edits

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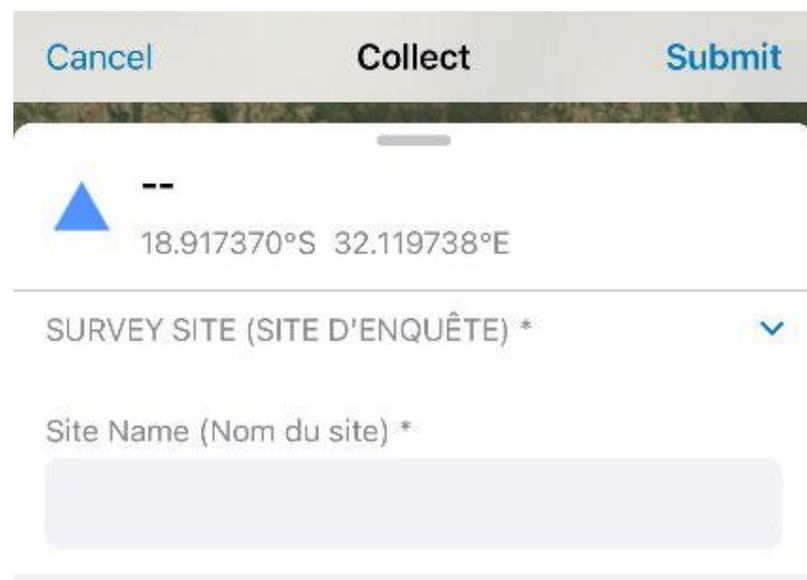
## **Configure Device Settings**

Turn on Location Services and disable Wi-Fi

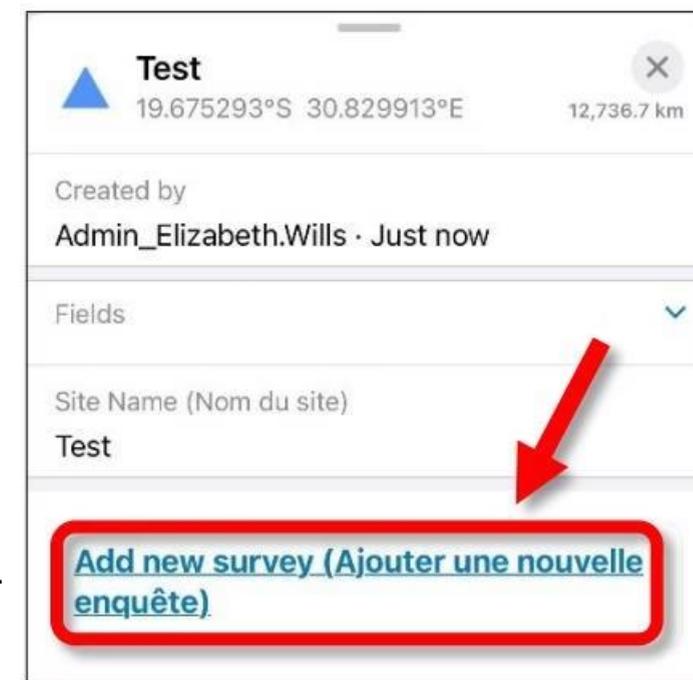
Never assume you're prepared for offline data collection without testing your setup first. Before heading to the field, connect to a strong Wi-Fi network and send any unsent surveys in the Survey123 Outbox and sync all offline maps in Field Maps. This ensures you're starting with a clean slate for your field work.

In the Field Maps app, check your profile settings by tapping the profile icon in the upper left corner. Make sure that Auto-Sync is NOT enabled, as this could cause issues when working offline. When you're ready to begin field work, turn off your device's Wi-Fi and ensure Location Services are enabled to allow accurate GPS positioning during data collection.

# Collecting data in Field Maps



After submitting a new survey site in Field Maps, a pop-up will appear with a link to "Add new survey."



## Position Yourself

Stand at the location of the site you want to record and verify your position on the map

## Fill Required Fields

Complete all fields marked with a gray asterisk (\*) which indicates they are required

When collecting data in the field, ArcGIS Field Maps uses your device's internal GPS to locate your position on the downloaded map. It's important to stand at the exact location you want to record to ensure accurate geospatial data. The accuracy of your position depends on your device's GPS capabilities and environmental factors like tree cover or nearby buildings.

## Create New Feature

Tap the plus sign located in the lower right corner of the screen to open the data form

## Submit and Link

Tap "Submit" to create the feature, then tap the survey link in the pop-up to open Survey123

# Completing surveys in Survey123

## Required Fields

All fields marked with a red asterisk (\*) must be completed to submit the survey. Pay close attention to field hints that provide guidance on the expected input format.

## Conditional Questions

New fields may appear as you complete the survey based on your previous answers. These dynamic forms adapt to capture relevant information based on your specific situation.

## Data Validation

Survey123 automatically validates your input to ensure data quality. Error messages will appear if entered data doesn't meet the required format or parameters.

▼ **Survey Response**

Site Name \*  
Name of site  
Test

Site Type \*  
Type of property

Host \*  
Host species

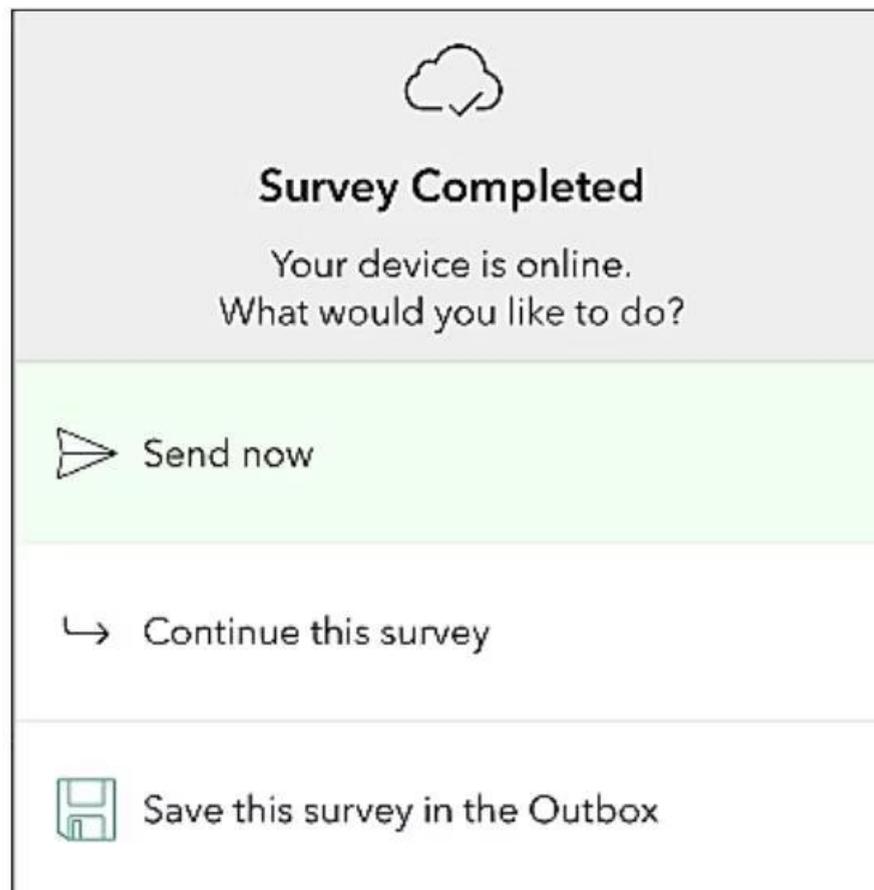
Site Comments  
Optional notes about this site

▼ **Activity Details**

Activity Date \*

Field Technician \*  
First and last names

# Managing completed surveys



## Survey Completion Options

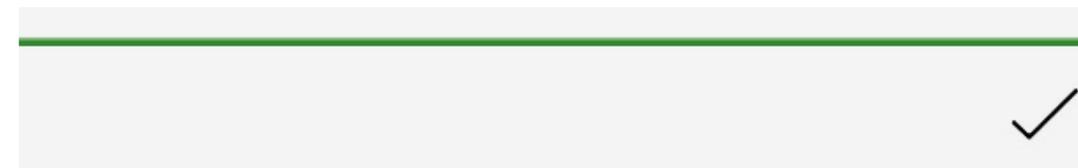
When you complete a survey by answering all required fields and tapping the checkmark, you'll see three options:

- **Send Now** - Use when connected to Wi-Fi to immediately transmit data
- **Continue This Survey** - Return to the form to make additional changes
- **Save in Outbox** - Store the survey locally until Wi-Fi is available

## Managing Saved Surveys

Surveys saved to the Outbox remain on your device until you manually send them. To view these surveys:

- Tap the Outbox bar in Survey123
- Review surveys in list or map view
- Edit individual surveys if needed
- Select "Send" to transmit all surveys when Wi-Fi is available



In most field situations, you'll be working offline and should choose "Save this survey in the Outbox" when completing a form.

This stores the survey on your device until you return to an area with Wi-Fi connectivity. When you're ready to submit your surveys, connect to Wi-Fi, open Survey123, and tap the Outbox to send all pending surveys.

After sending surveys, they'll move to the "Sent" folder, where you can still review them. You can also edit and resend surveys from this folder if needed, though any changes will create a new version in the database rather than overwriting the original submission.

# Editing and deleting surveys

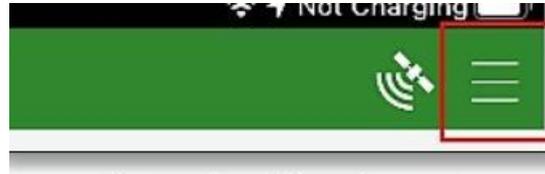


Figure 25. Menu icon



H6

## Open Survey

Tap the survey icon to access the survey you want to modify

☰

## Access Options

Tap the menu icon (three dots) in the top right corner

⌵

## Select Action

Choose "Edit Survey" to modify or "Delete Survey" to remove

🗑️

## Confirm Changes

Make your edits and save, or confirm deletion when prompted

You may need to edit surveys to correct errors or add information, or delete surveys to free up device memory. In Survey123, you can easily manage your surveys through the options menu. When editing a survey, you'll have access to all the same fields as when you first created it, allowing you to make comprehensive changes.

# Changing display language

The Africa Phytosanitary Program supports multiple languages to accommodate users across different regions.

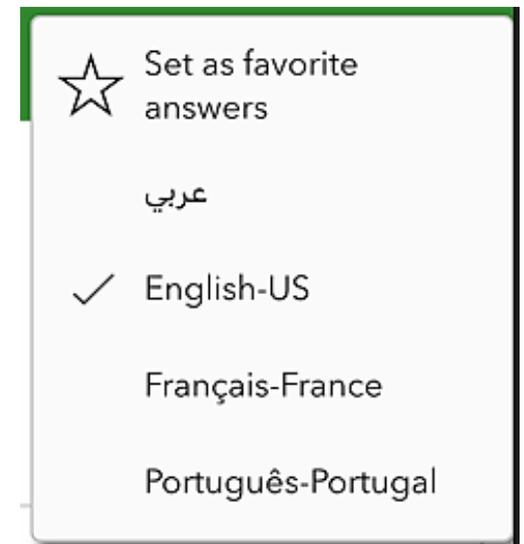
At the bottom of the form, you'll find language options that allow you to switch between available languages.

To change the language in Survey123, locate and tap the survey icon to open it, then tap "Collect" to open the form.

Changing the language affects only the survey questions and field labels - any data you enter will remain the same regardless of the selected language.

This feature is particularly useful in multilingual teams or when working in regions where users may prefer different languages.

The system supports English, French, Arabic, and several other languages commonly used across Africa.



# Synchronizing Your Data

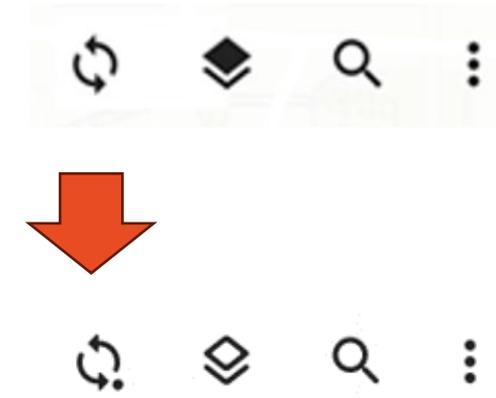


## Daily Sync

Sync your data morning and evening every day

## Data Integrity

Complete synchronization ensures data quality



## Transfer Direction

Data flows both to and from central servers

Timely synchronization is critical for maintaining data integrity and allowing managers to view survey progress in near-real time. The sync process pushes your collected data to web maps for reporting tools, while also downloading work from other surveyors in your country to your device. This two-way data flow improves coordination among field teams working in neighboring areas.

In Field Maps, pending edits are indicated by a dot on the sync icon. To sync your data, connect to Wi-Fi, open Field Maps, and tap the sync icon. A window will appear showing all pending edits waiting for synchronization. Review the list and tap "Sync Now" to upload your data to ArcGIS Online. Make syncing a regular habit - at minimum, sync your data first thing in the morning and last thing at night every day.

# Using the APP GIS Hub

## Africa Phytosanitary Programme



### Web Portal

Central gateway for accessing and reviewing all collected survey data



### Documentation

Contains training materials and application support resources



### Country-Specific

Organizes data by participating country with dedicated pages



### Secure Access

Requires authentication with valid ArcGIS Online credentials

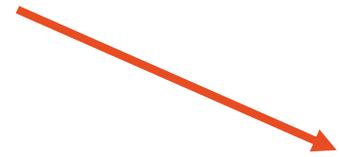
The APP GIS Hub (<https://gpp.ippc.int/>) is a comprehensive web portal that serves as the gateway to reviewing and editing all collected survey data. It provides access to training materials, documentation, and application support resources.

The hub is organized by country, with flags representing each participating nation. Clicking on a country name takes you to a page listing all the Experience Sites for every pest or plant virus being surveyed in that country.

# Monitor Tab in Web Experience

## Explore Data by Country

Phytosanitary reporting tools are linked in the below pages by country



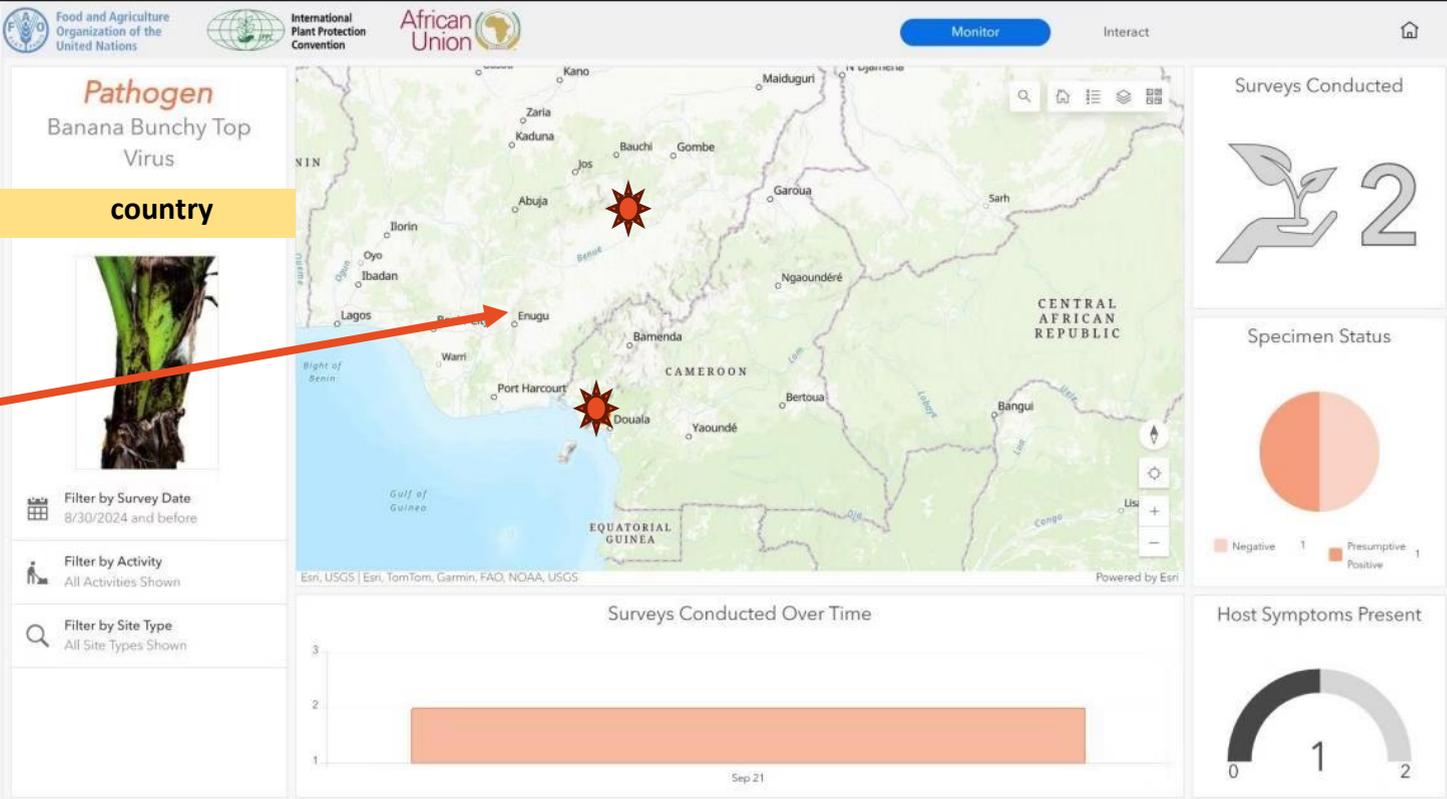
 <p><u>Cameroon</u></p> <p>Cameroon page to feature applications by pest / plant...</p>	 <p><u>Democratic Republic of Congo</u></p> <p>Democratic Republic of Congo page to feature applications b...</p>	 <p><u>Egypt</u></p> <p>Click here to access applications by pest / plant disease.</p>	 <p><u>Guinea-Bissau</u></p> <p>Guinea-Bissau page to feature applications by pest / plant...</p>
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### Experience Sites

Explore data by topic by selecting from the icons below.

 <p><u>Achaea catocaloides Web Experience</u></p>	 <p><u>Amrasca biguttula Web Experience</u></p>	 <p><u>Babuvirus BBTY Web Experience</u></p>
 <p><u>Bactrocera spp. Web Experience</u></p>	 <p><u>Phthorimaea absoluta Web Experience</u></p>	 <p><u>Spodoptera frugiperda Web Experience</u></p>



**Pathogen**  
Banana Bunchy Top Virus

**country**

Filter by Survey Date: 8/30/2024 and before

Filter by Activity: All Activities Shown

Filter by Site Type: All Site Types Shown

Surveys Conducted Over Time

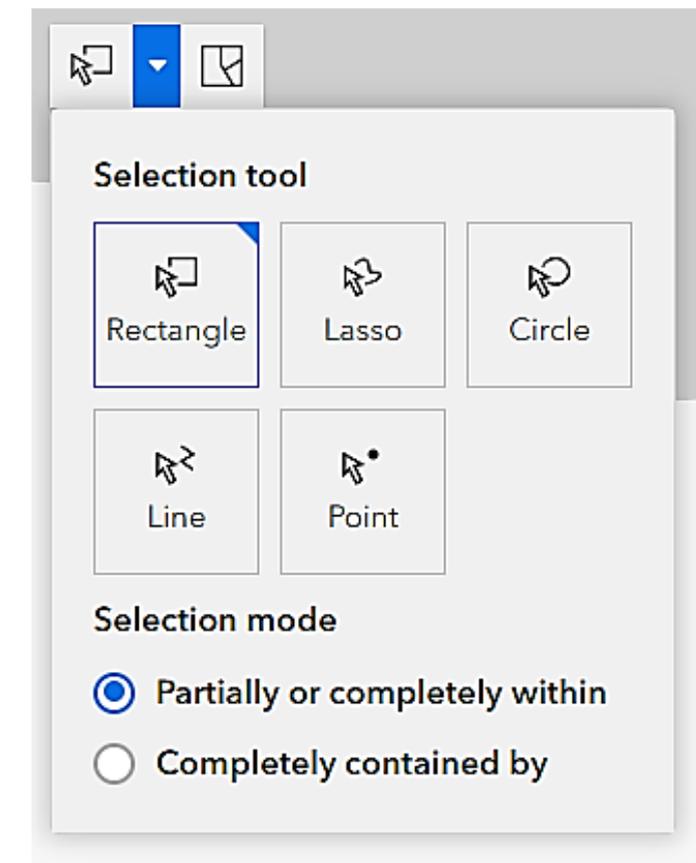
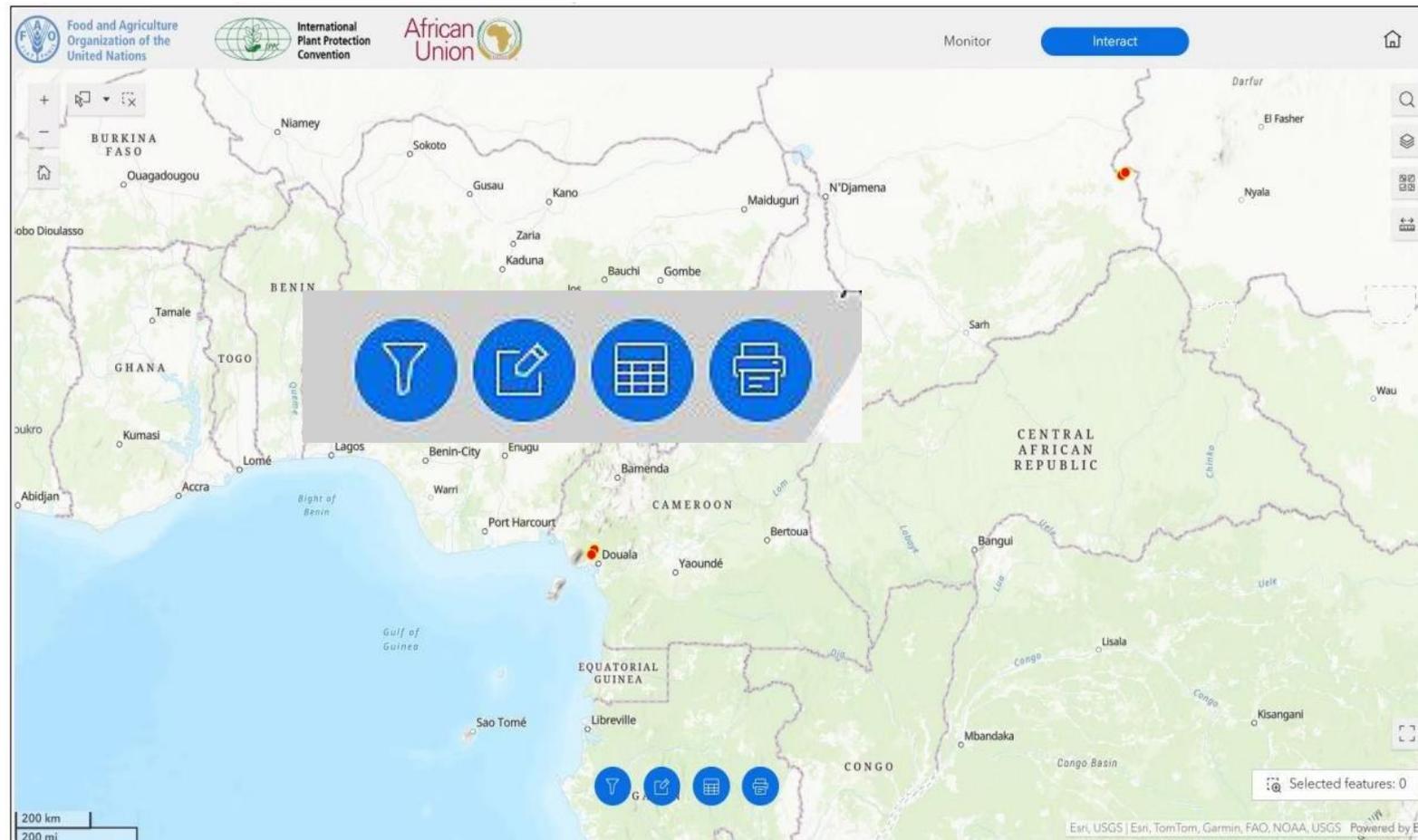
Date	Surveys Conducted
Sep 21	2

Surveys Conducted: 2

Specimen Status: 1 Negative, 1 Presumptive, 1 Positive

Host Symptoms Present: 1

# Interact Tab in Web Experience





**Africa  
Phytosanitary  
Programme  
Africa  
Train-the-Trainer Workshop  
Phytosanitary  
Programme**

**Thank you**

Train-the-Trainer workshop

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