



## Residue Data & Photo Collection Protocol

### Project Objectives

The Agriculture and Agri-Food Canada Crop Residue Measurement survey has been designed to enable data collection by farmers and researchers across Canada. AAFC is researching methods to estimate crop residue levels on soil using satellite data. Photos at the field scale, as

well as precise information about when field activities such as harvest, tillage, manure application, and seeding occur, are needed to validate the methods.



### Getting Started

The field photos will be collected using a smartphone. The survey will be completed using Survey123 which is an app available on iOS and Android. The survey can be done in the field when the field photos are taken or at a later time.

### Smartphone Requirements

Check that your geolocation services are turned on for your device. This is **essential** so that the photos you take are geotagged (the location the photos are taken at is logged in the photo properties).

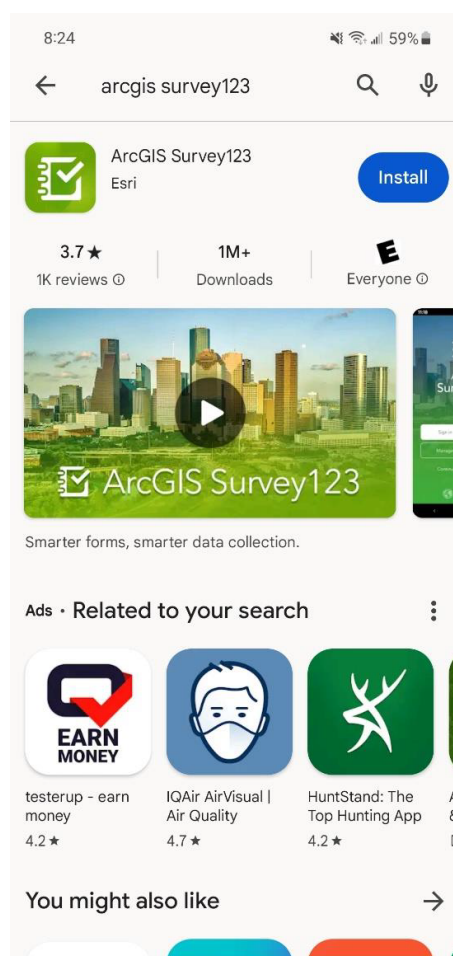
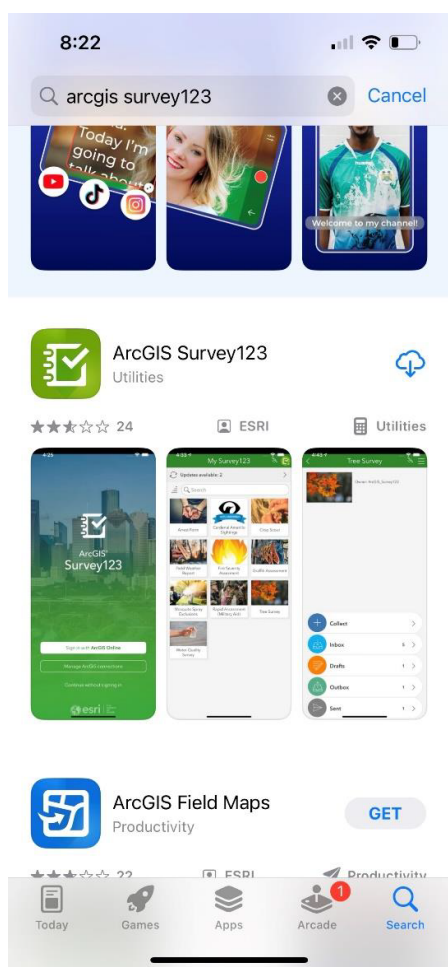
For iOS (iPhone, iPad) go to Settings > Privacy & Security > Location Services and verify that Location Services is ON.



For Android, go to Settings > Location and make sure that Location Services is ON.

## Survey123 App Installation

Download ArcGIS Survey123 from your app store (Google Play Store - Android) (Apple App Store - iOS) onto the device you will use to submit the survey.





Open the ArcGIS Survey123 app. If prompted, allow the app to access your camera, take pictures and record video.

Select “Continue without logging in” on the launch page of the app. If prompted for access to your location, allow access.

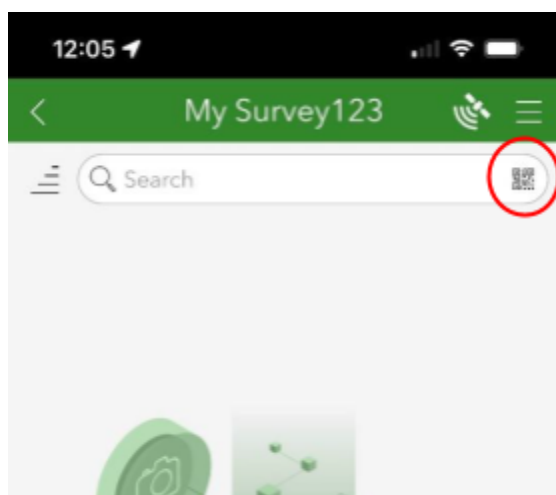
## Accessing the Survey

The first time you use the app you will need to follow the steps below to access the survey. In the future the survey will be directly accessible on the home screen of the app.

### Option 1: QR Code

If you have two devices, you can display this protocol on one device and scan the QR code on screen using your smartphone.

On the home screen select the small QR code symbol. This will open a QR code scanner. Point your smartphone camera at this QR code.





A browser will open. Select “Open in the Survey123 Field App”. The Crop Residue Measurement survey form should automatically open in the app.



[QR Code Video Tutorial](#)

## Option 2: Link

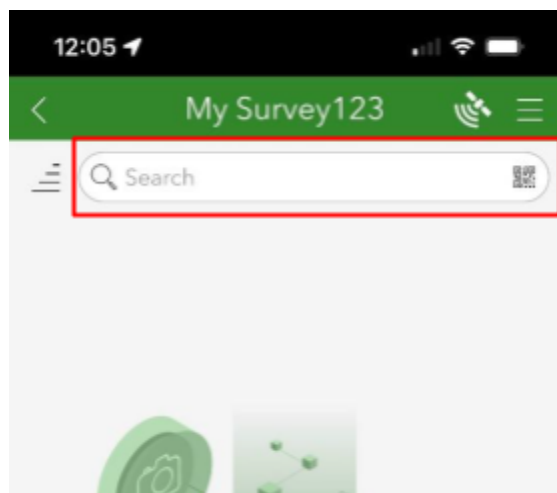
Using your smartphone, open this protocol document and then click on the link below. Alternatively send this link to yourself to open on your smartphone (email, text).

<https://arcg.is/1LOnHX0>

A browser will open. Select “Open in the Survey123 Field App”. The Crop Residue Measurement survey form should automatically open in the app.

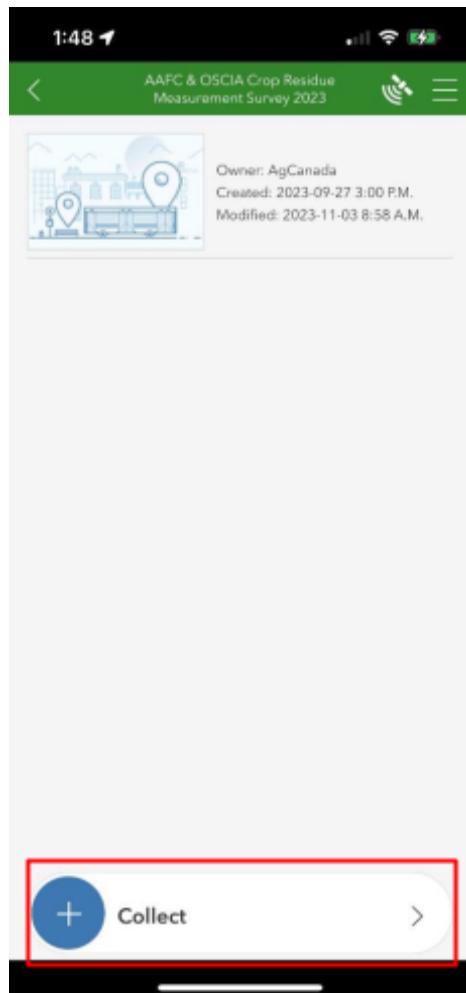
## Option 3: Search

You can also simply search for the survey using the search bar on the homepage of the app. Search for “AAFC Crop Residue”. The survey should appear. Click on it to open it.





Review the sections on *Taking Field Photos* and *Submitting the Crop Residue Survey* before proceeding with data collection. When you are ready to collect data, open the AAFC Crop Residue Measurement Survey in the app and then select “Collect” on the next page to open a copy of the survey.





## Taking Field Photos

### When and Where to Take Field Photos

Photos and data submitted should be from fields large enough to be visible on satellite imagery - a minimum size of 4 hectares or 200 meters by 200 meters.

Submissions should be made after a field activity is completed, with photos taken as soon as possible following the event. Relevant field activities are:

- Harvest
- Tillage
- Manure application
- Seeding
- Residue treatments or removal

When a field activity is completed for the entire field, select one area of the field that is at least 50 meters (160 feet) from the field edge, and at least 10 meters (30 feet) from trees and buildings. Three photos will be taken near this area.

One submission of the survey will include three (3) photos taken in the same area of the field following this procedure:

1. Walk 50 meters (160 feet) from all field edges. Ensure you are at least 10 meters (30 feet) away from any trees or buildings.
2. Take 1 photo at this location.
3. Walk about 10 meters (30 feet) or about 10 strides further into the field.
4. Take 1 photo at this location.
5. Turn and walk about 10 meters (30 feet) or about 10 strides, making a rough triangle shape.
6. Take 1 photo at this location.





## How to Take Field Photos

Photos can be taken in one of two ways:

### Option 1: Directly within Survey123 while filling out the survey form

- Open the survey and fill out the relevant field information.
- At the bottom of the survey, select the camera icon to take photos with the app.

### Option 2: Using your phone camera and uploading the photos to the app when completing the survey afterwards

- Take photos using your smartphone's camera app.
  - If possible, adjust your aspect ratio to take square photos (NOT required).
- When you're ready to fill out the survey, open it and fill out the relevant field information.
- At the bottom of the survey select the folder icon to upload previously taken photos from your camera gallery.
  - If you are taking photos of multiple fields, consider how to organize or differentiate between fields to avoid confusion when filling out the survey for a particular field.

When taking the photos hold the smartphone horizontally (looking at the ground) between waist and chest height (1-1.5 meters off the ground).

Please avoid:

- Taking photos that are pointed at the horizon
- Fingers obscuring the lens
- Capturing the feet or clothing of the camera holder
- Shadows in the photo and low sun conditions

**TIP:** For best results, face the sun when taking photos to avoid shadows, and take photos mid-day while the sun is high in the sky.



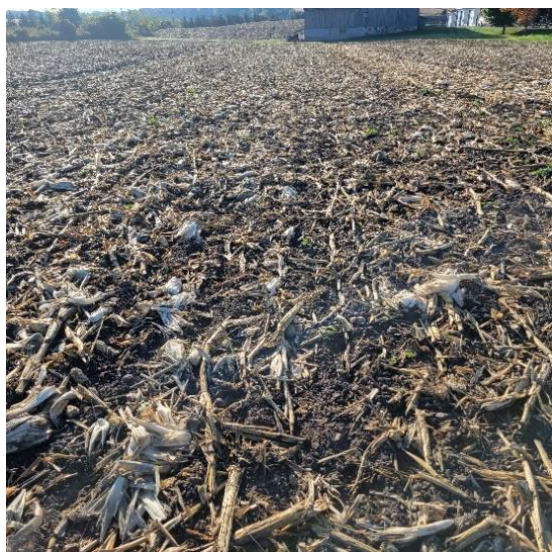
[Field Photo Data Collection Protocol Video Tutorial](#)



## Good



## Bad



Pointing at the horizon.



Dark shadows.



## Submitting the Crop Residue Survey

When you have completed a field activity and are ready to make a submission:

1. Open the AAFC Crop Residue Measurement survey form and select “Collect”.
2. Enter your participant ID.
3. Select the field activity that was completed on that field.
4. The following questions will be adjusted depending on the field activity completed.
5. Answer the question about weather events in the days preceding the field activity.
  - a. Weather impacts the quality of our satellite observations. Weather station data for the region is not always reliable for a site located away from the station.
6. Take or upload your 3 field photos.
7. Submit the survey by selecting the check mark in the bottom right hand corner of the survey page.
8. Select an option:
  - a. Choose “Send now” to submit immediately.
    - i. If you don’t have internet access at the time of submission, ArcGIS will put the survey in your Outbox to send when the internet is connected.
    - ii. The Outbox appears in the hub for the survey once you use it.
  - b. “Continue this survey” if you need to make changes before submitting.
  - c. “Save in outbox” to revisit the submission later. **Don’t forget to submit it later!**

## Questions or Technical Assistance

For farmers and agronomic service providers associated with OSCIA: please reach out to OSCIA for questions about the protocol or for technical assistance.

For collaborators working directly with AAFC, please reach out to Samantha Schultz ([samantha.schultz@agr.gc.ca](mailto:samantha.schultz@agr.gc.ca)) for questions.