

# **PRISMA 4 AFRICA**

## Validation data collection

Webinar day#3 04.12.2024 – 13/02/2025

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### Webinar agenda



#### Webinar DAY 1 (18.11.2024).

- Introduction of the remote sensing crop monitoring activities in the project PRISMA4Africa.
- Illustration of the variables object of the validation activities. Theory and practice of the measurement methodologies.
- PocketLAI: theory and practice. Installation on participants' smartphones (only Android OS).
- Discussion Q&A.

#### Webinar DAY 2 (20.11.2024).

- Digital Hemispherical Photography (DHP) with fisheye lenses on smartphones. Theory and practice. Lens fitting, photo collection and download.
  Pixel check with image processing software (e.g. Paint)
- Installation of Can-Eye software and calibration of smartphone lenses.
- Theory and practice of chlorophyll measurements in plant leaves.
- Discussion Q&A.

#### Webinar DAY 3 (04.12.2024 – 13/02/2025).

- ESU set-up campaign planning and uploading to smartphone. PIGNATTI
- QGIS exercise to plan a field campaign survey ROSSI
- Review of a hemispherical phots for LAI measurements. Data evaluation of sample data collected on a different site MIRZAEI

## ESU set-up campaign planning



The accuracy of remote sensing products has become a critical concern for their operational application.

Considering the unique characteristics of remote sensing data product, related to the spatial heterogeneity, the spatial correlation, and the multi-granularity, the in situ <u>field campaigns are</u> <u>essential</u> to verify the maturity of the products (e.g. LAI, pigments map etc.).

Sampling strategies estimate, through statistical procedures, the margin of <u>uncertainty</u> in the data obtained from samples.

It is important to choose a proper field sampling scheme that would the least amount of associated error.

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## ESU set-up campaign planning



The accuracy of remote sensing products has become a critical concern for their operational application.





Sampling approaches are expected to capture the natural variability of vegetation parameters within an area of interest, but in practice they are limited by available time and resources.

### 1. Probability sampling

includes some form of random selection in choosing the elements. Greater confidence can be placed in the representativeness of probability samples. This type of sampling involves a selection process in which each element in the population has <u>an equal and independent</u> <u>chance</u> of being selected.

### Four main methods of sampling include

- a. simple random;
- b. stratified random;
- c. systematic;
- d. cluster.





<u>**Random sampling**</u> methods, require a very limited prior knowledge on the parameter variability space, assume that collected samples are spatially independent.

At the same time, practical constraints and failures in designing the truly random sampling scheme are often enforcing a compromise between a statistically optimal and an experimentally feasible sampling.

Therefore, the random sampling methods are less suitable for crop species rich in dense canopies like sugar cane, where omitting some important areas due to the recombination of randomness results in an undersampling

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### 2. Non-probability sampling

the elements that make up the sample are selected by non random methods. This type of sampling is less likely than probability sampling to produce representative samples. Even though this is true, researcher could successfully use non-probability samples.

The three main methods are:

- a. Convenience;
- b. Purposive;
- c. Quota.



## e.g. soil sampling







#### **Random sampling**





#### Systematic grid sampling Systemat



Systematic random sampling



Illustration Source: IL Agronomy Handbook, Chapter 8, Pg. 93









How to sample soil

https://www.youtube.com/watch?v=3\_U9Z3fy0Ig

### definition of sampling points on map





## **Install QGIS**

Qgis Download L<u>i</u>nk: <u>https://www.qgis.org/download/</u>

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GIS Documentation	N C				Search	٩
D	ownload	QGIS for	your plat	form		
This p	age provides binary p	ackages (installers).				
The c	urrent version is QGIS	3.40.1 'Bratislava' and v	was released on 2024-11	22.		
The k	ong-term builds currer	ntly offer QGIS 3.34.13	Prizren'.			
QGIS	is available on Window	ws, macOS, Linux, And	Iroid and IOS.			
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A Geographic Information System (GIS) is a computer system that analyzes and displays geographically referenced databases.



### **Digital Number**

- Integer : 6
- Decimal/Float : 6.2

### 3 geometric primitive

- Point
- Line
- Poligon





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#### Layers

### **Reference system (RS)**





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### **Copernicus Dataspace Ecosystem**

S2 Portal Link:

PROGRAMME OF

THE EUROPEAN UNION

https://dataspace.copernicus.eu/

Custom Script Link:

(opernicus @esa

https://raw.githubusercontent.com/sentinel-hub/customscripts/master/sentinel-2/lai/script.js

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### **Mission Planning**

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Google My Maps : https://google.com/intl/it/ maps/about/mymaps/



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Missione Maccarese 22-03-... 31 May 2023 🕥

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