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**AGRICULTURAL
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POUR L'AFRIQUE

Areal sampling for agricultural statistics in Tunisia

Tunisia's experience

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Economic Conditions**

Hammamet, Tunisia, 24–28 November 2025

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3. Methodological approach
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5. Challenges/limitations
6. Lessons learned
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1. Introduction: General Context

Importance of agriculture in Tunisia



9%
of national GDP



10 %
of exports



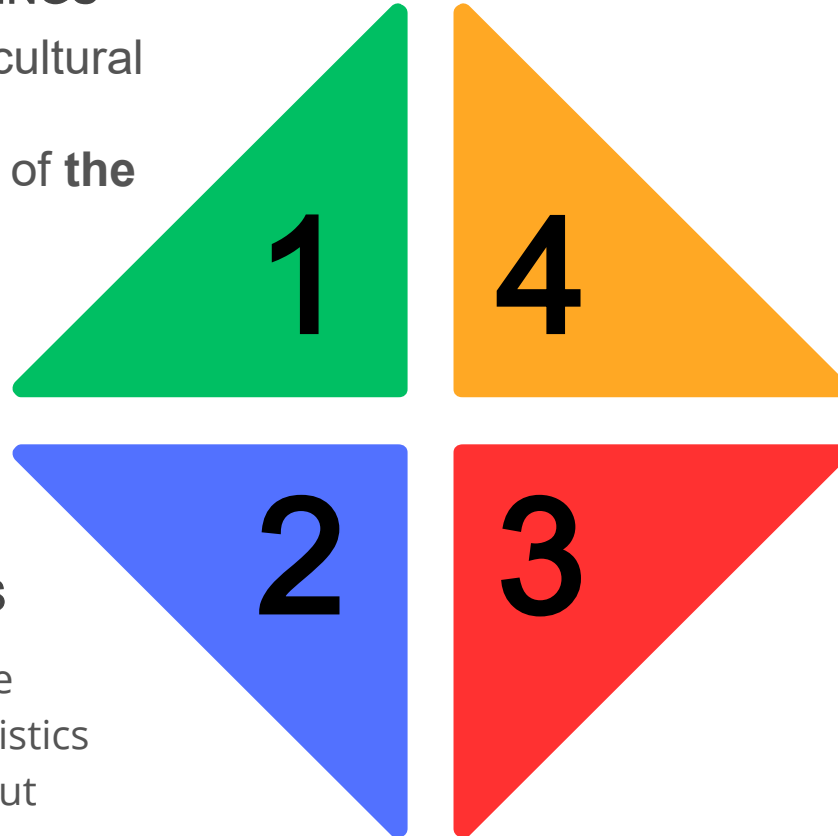
15 %
of the working
population

1. Introduction: The pillars of the agricultural statistical system



SURVEY ON THE STRUCTURE OF AGRICULTURAL HOLDINGS

- It covers **10%** of agricultural holdings
- Constitutes the basis of **the sampling frame for agricultural surveys**



GENERAL AGRICULTURAL CENSUS

Tunisia's **first** GCA
Key pillar of the agricultural statistics development strategy
Preparations ongoing



ANNUAL PROGRAMME OF AGRICULTURAL STATISTICS

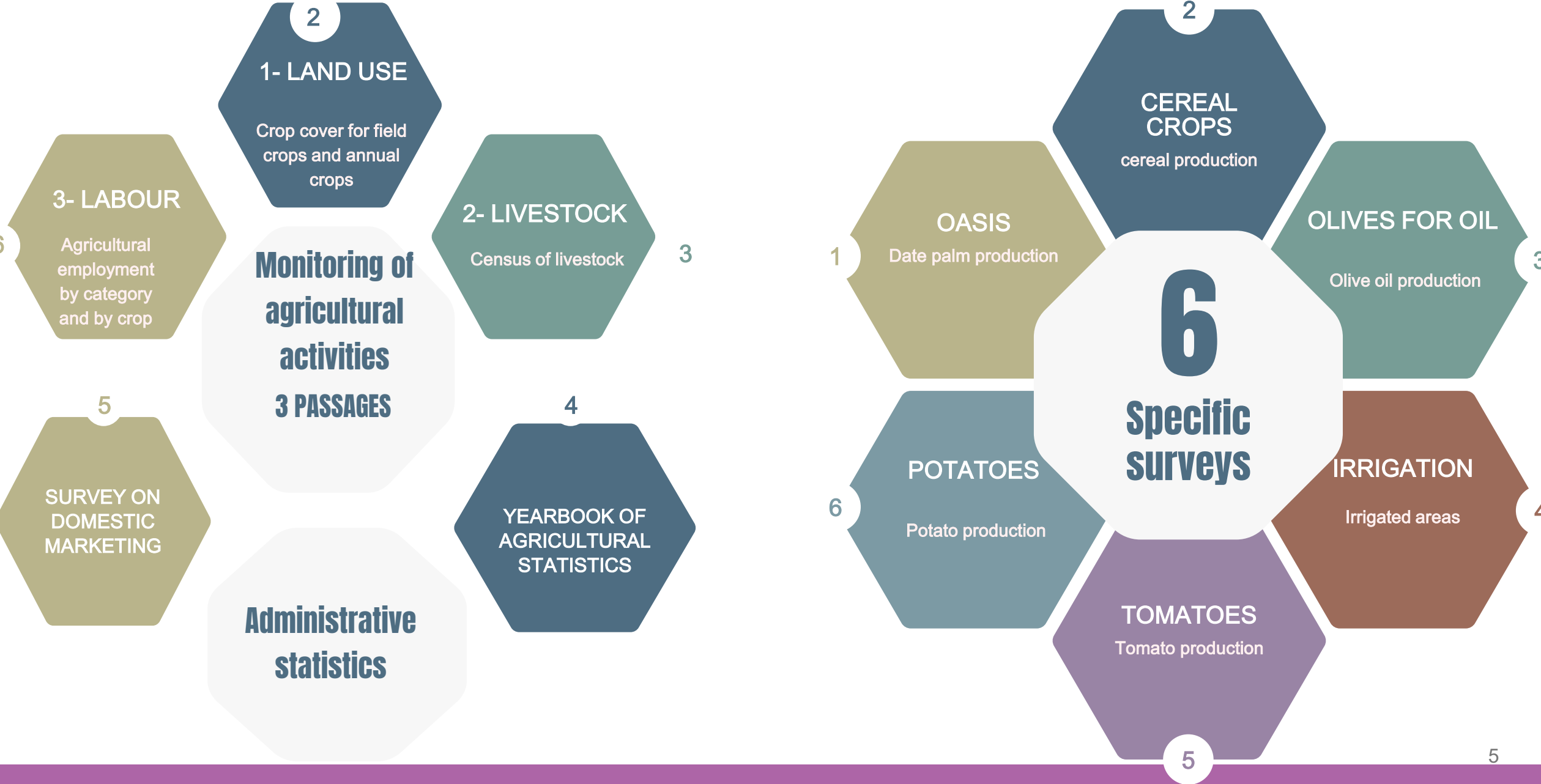
Includes annual surveys and the collection of administrative statistics
4 of these surveys are carried out using **objective measures**



CONJUNCTURAL SURVEYS

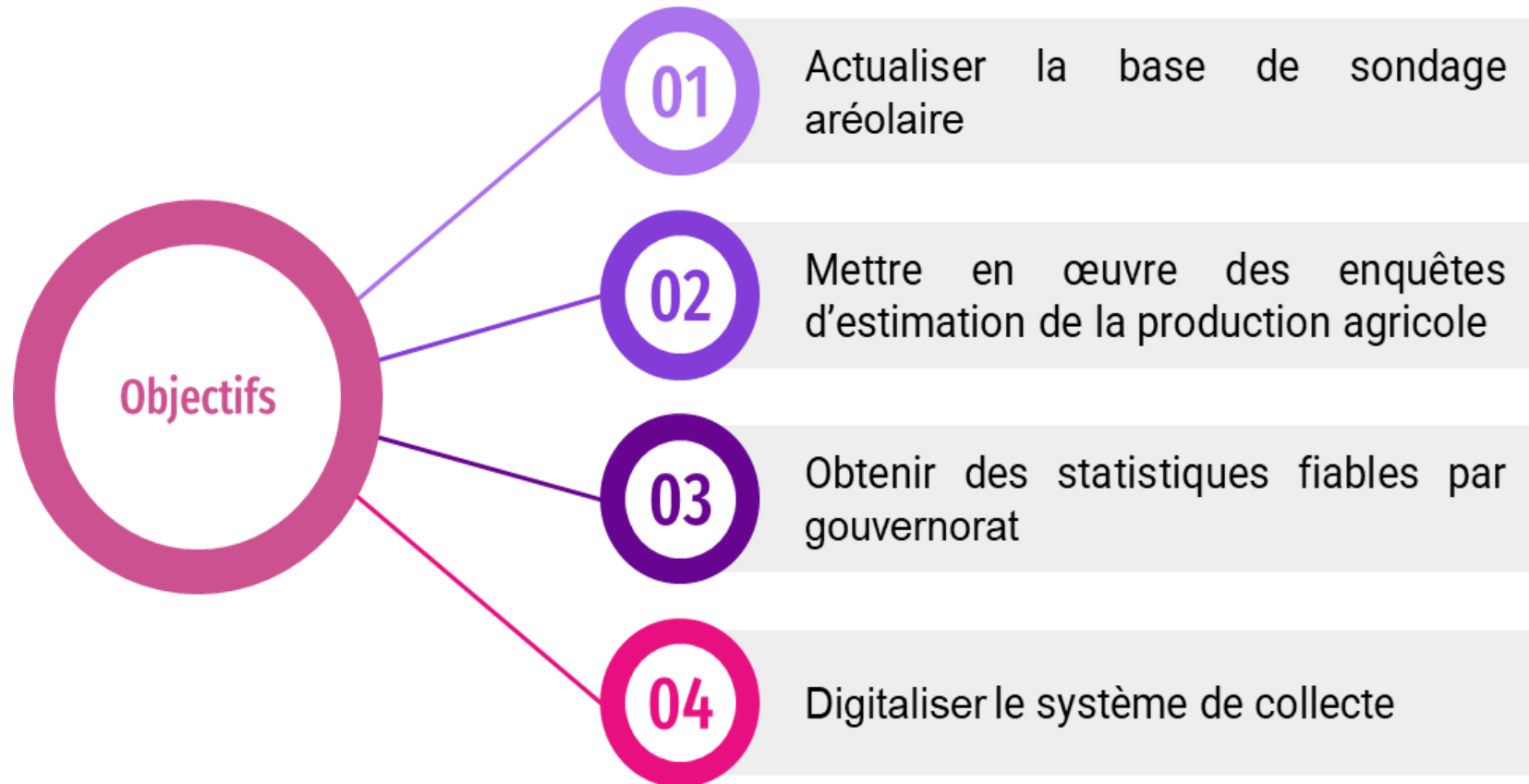
Surveys conducted on an ad hoc basis to meet specific needs, e.g. agricultural production routes, losses and waste

1. A little more detail... Components of the annual programme?



2. Objectives

In the absence of an exhaustive list of agricultural holdings, the General Directorate for Agricultural Studies and Development used areal sampling to:



3. Methodological approach

Use of GIS for:



15 strates



Oliviers & Oasis

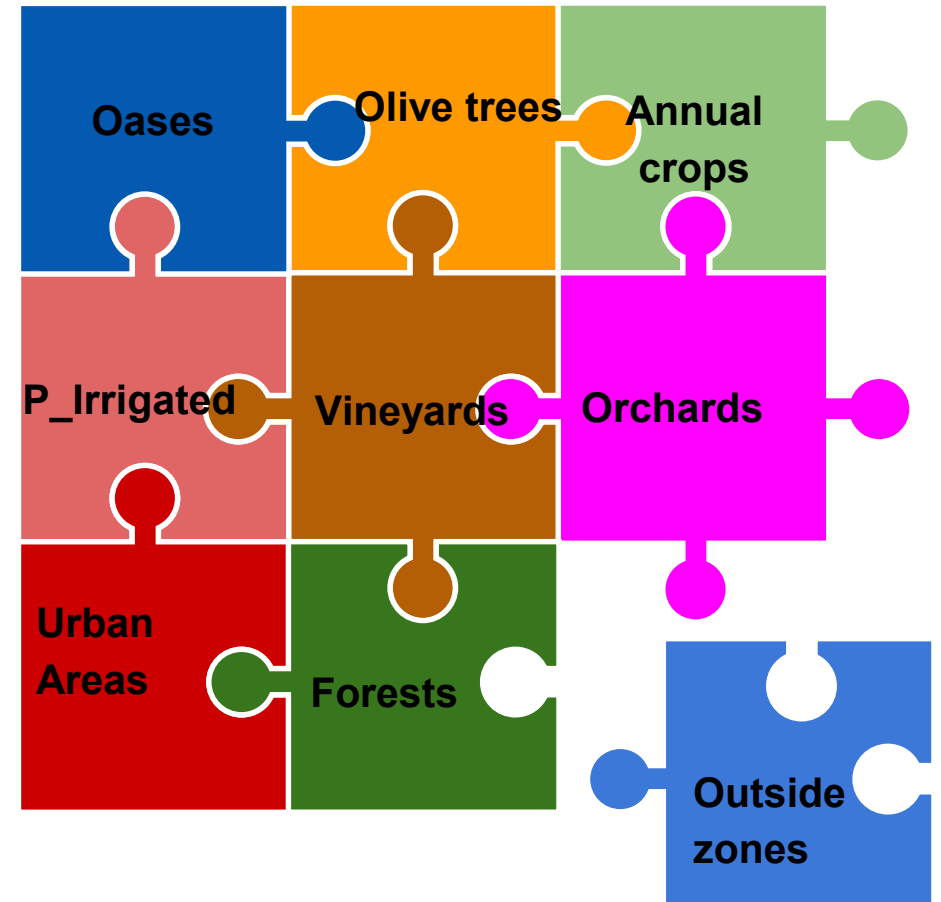
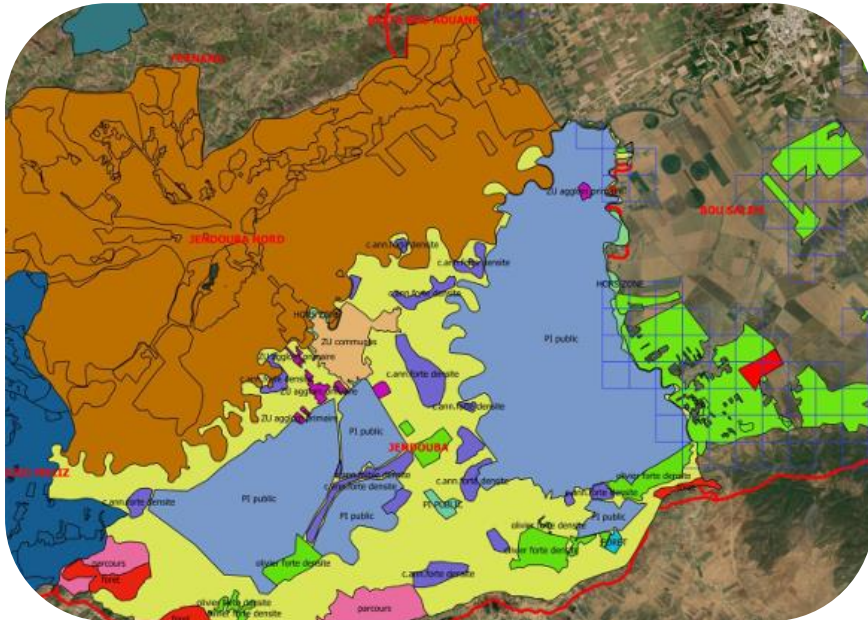


échantillonnage aléatoire

3. Main achievements: Stratification

Division of the territory into homogeneous strata in accordance with natural boundaries based on:

- land use
- cultivation method (irrigated, dry, etc.)



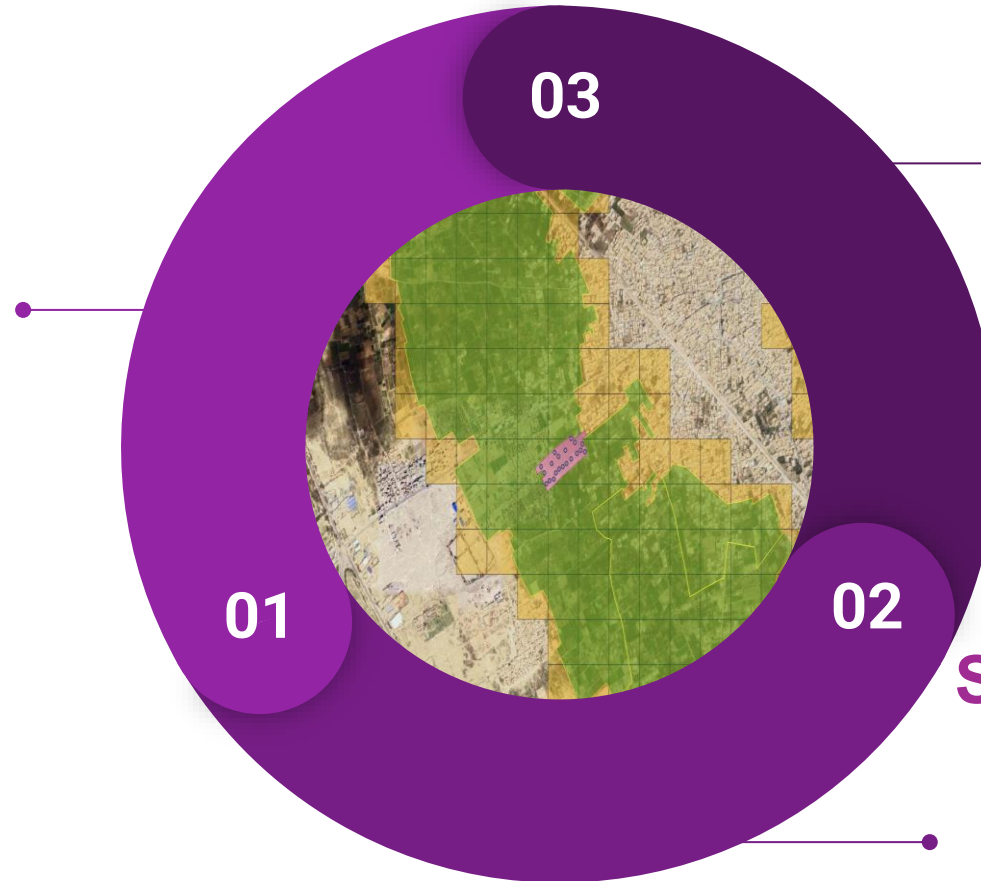
3. Main achievements: the Oasis survey

Survey base:

Created by superimposing:

- the oasis stratum layer,
- a 5-hectare grid,

Coverage: 4 governorates



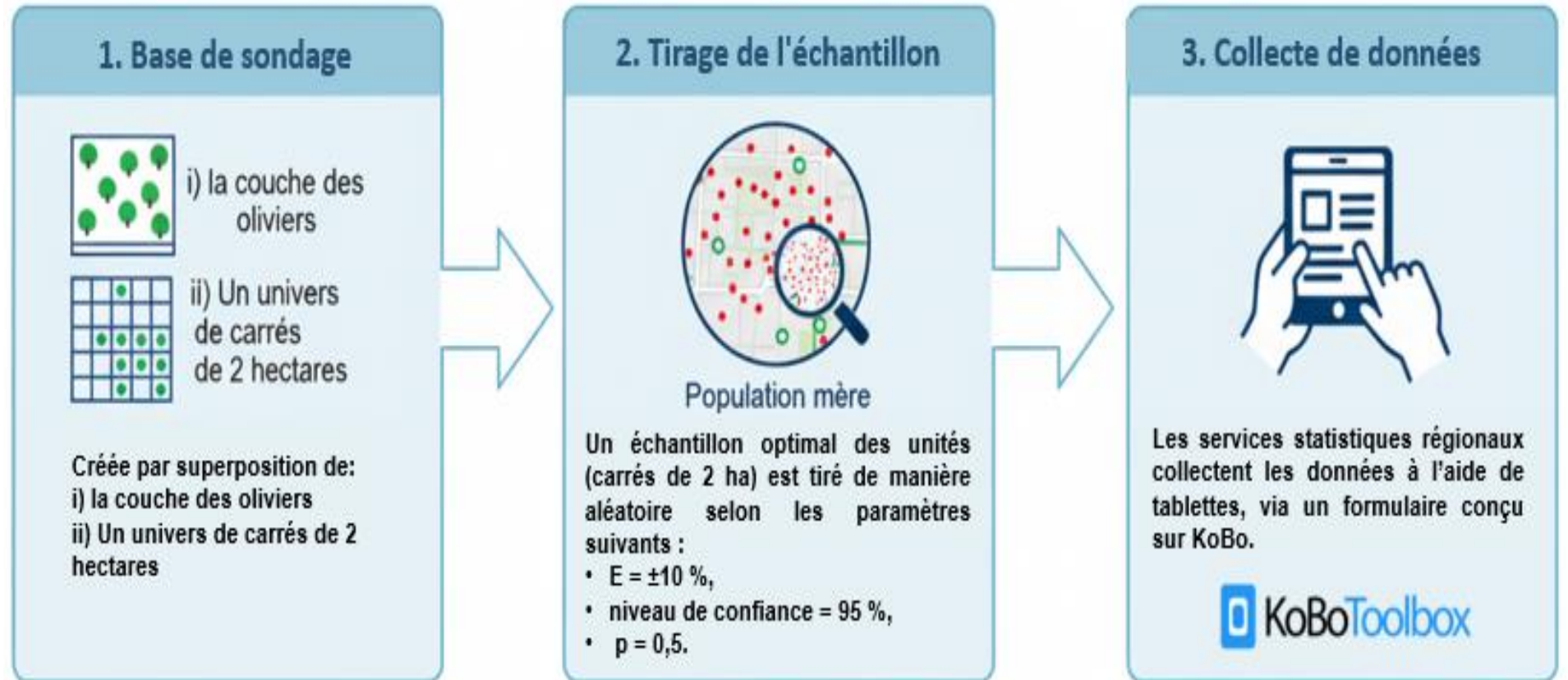
Data collection

Regional statistical services collect data using tablets, via a specific form designed on KoBo.

Sampling

An optimal sample ($E = \pm 10\%$, 95%, $p=0.5$) of 5-hectare squares is drawn at random.

3. Main achievements: the olive oil survey



Coverage: the entire country (24 governorates)

3. Main achievements: the olive oil survey

Sample drawing using an extension developed specific by the DGEDA

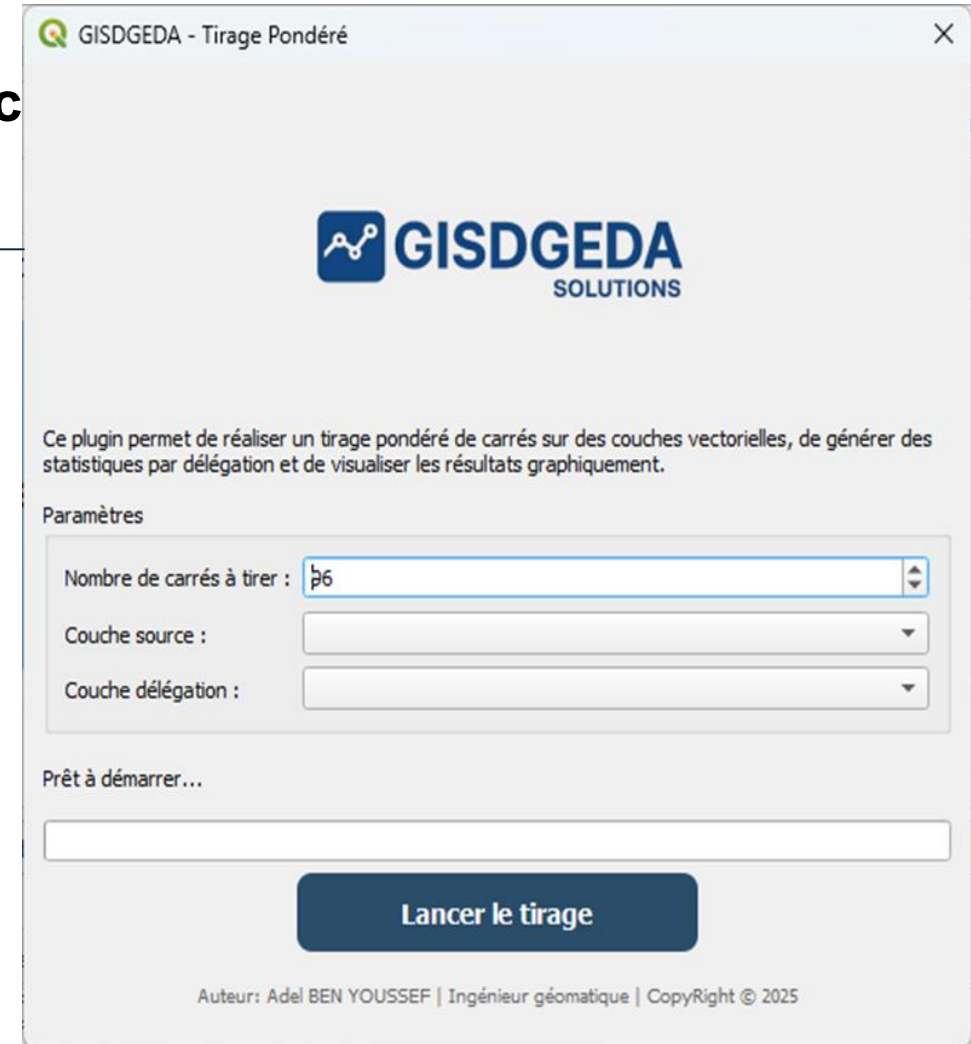


Use of: Python



Objective:

#Standardisation and #Automation of tasks



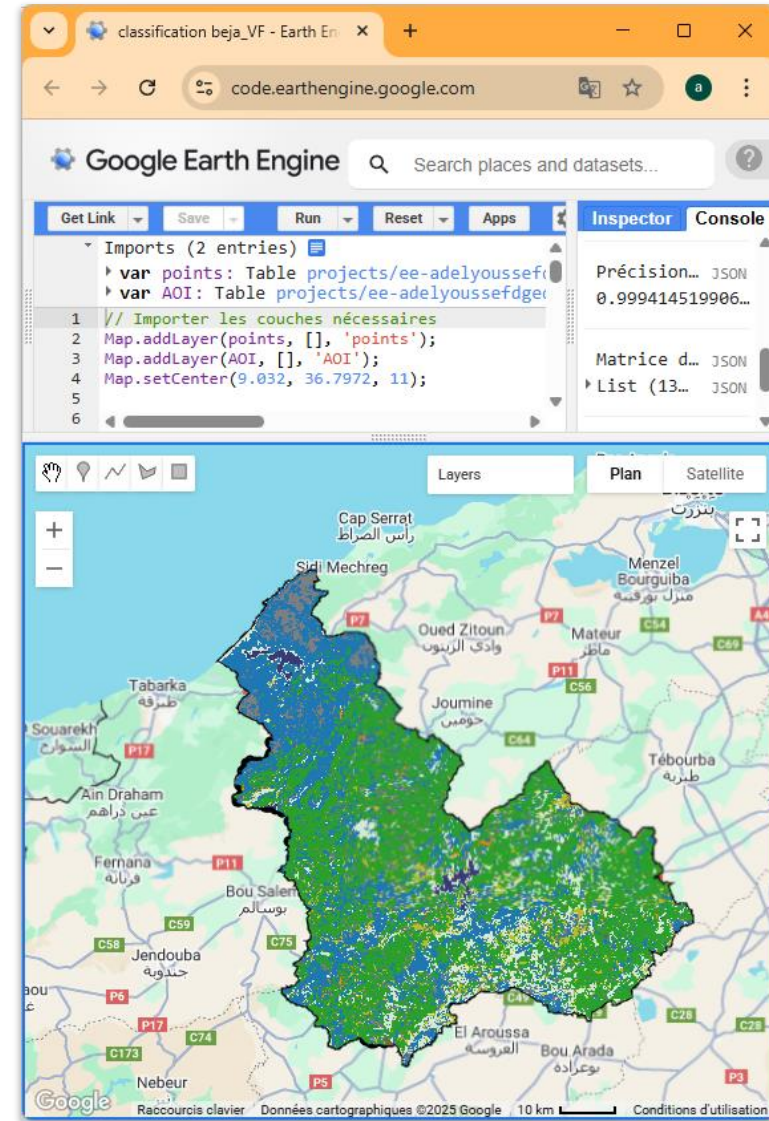
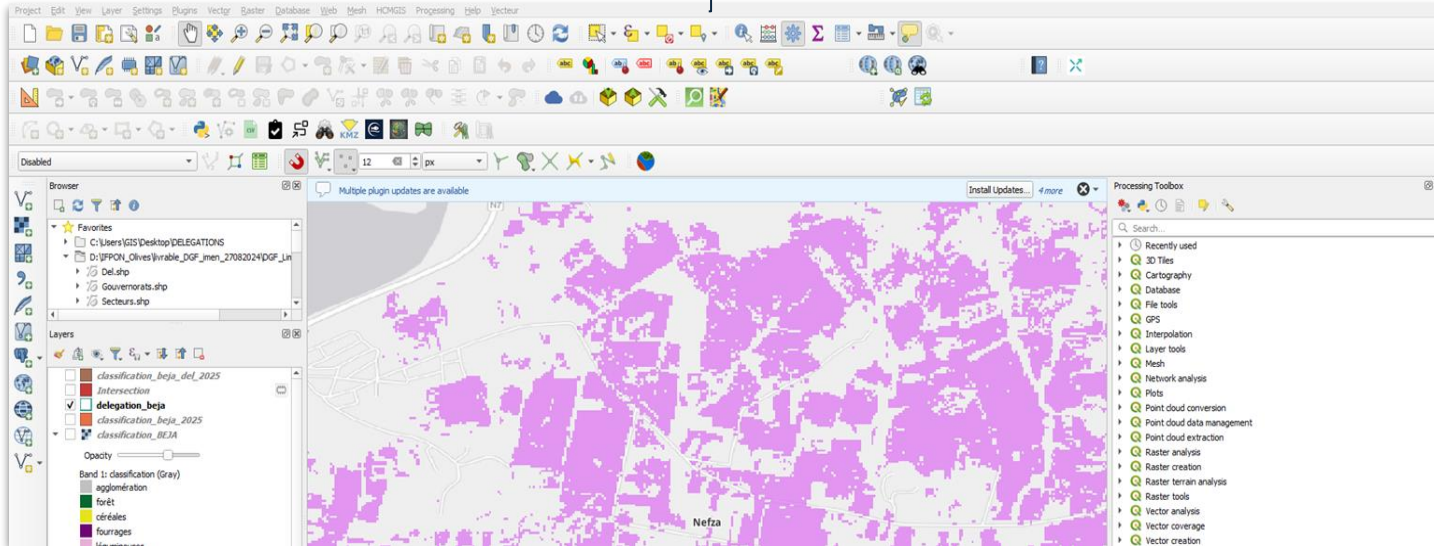
3. Main achievements: Remote sensing

Estimation of cereal areas:

carried out using GIS and remote sensing techniques



Google Earth Engine



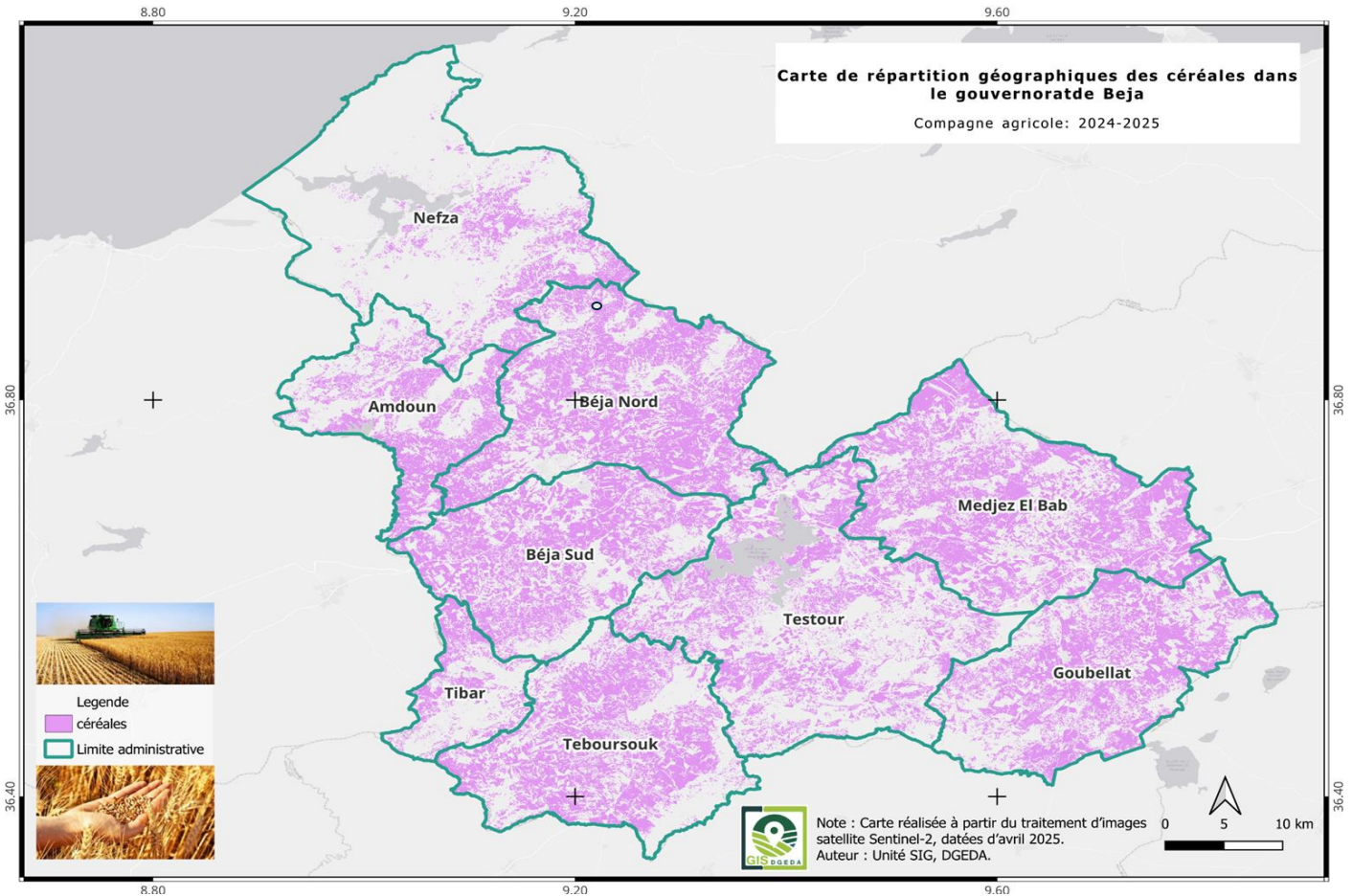
3. Main achievements: Remote sensing

❖ Methodology:

Adoption of supervised classification for the delimitation of cultivated areas.

- Selection of 5,303 random points distributed throughout the governorate to determine land use

Distribution of samples



- Cross-checking of results with regional cereal masks to improve classification accuracy.

5. Challenges/limitations

Intra-segment variability

High heterogeneity due to diversity of varieties, planting densities and management methods.



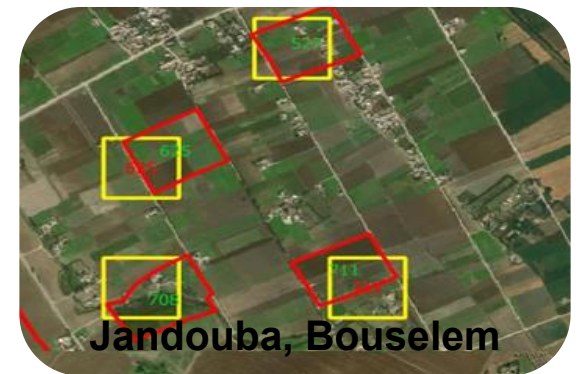
Livestock & Labour

Low accuracy for livestock and agricultural labour surveys



Delimitation of units

need for remodelling according to the natural boundaries of the segments



6. Lessons learnt



Training and supervision

Investigators must be proficient in spatial reading, geolocation and digital collection



Adaptation to the terrain

Adjust squares to natural boundaries to ensure uniformity of occupation



Yield variability

Reduce variations related to driving style and variety.



Digitisation of data collection

The use of KoBo improves data reliability, traceability and supervision.

7. Way forward/next steps

1 RGA

Ensure full implementation of the RGA within the specified timeframe (2026)

2 Centralised database

Establishment of a farm register

3 SSA

Upgrade the agricultural statistical system

4 Capacity building

Strengthen human and institutional capacity

Digitisation of the Statistical System

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Thank you