Landscape Features in the LUCAS 2022 survey

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JRC works on landscape features (LF)

- Collect / synthesize LF information available at EU & MS level (iMAP)
- **LUCAS Landscape Features module**
- Combining LUCAS LF & Copernicus SWF for an unbiased area estimation






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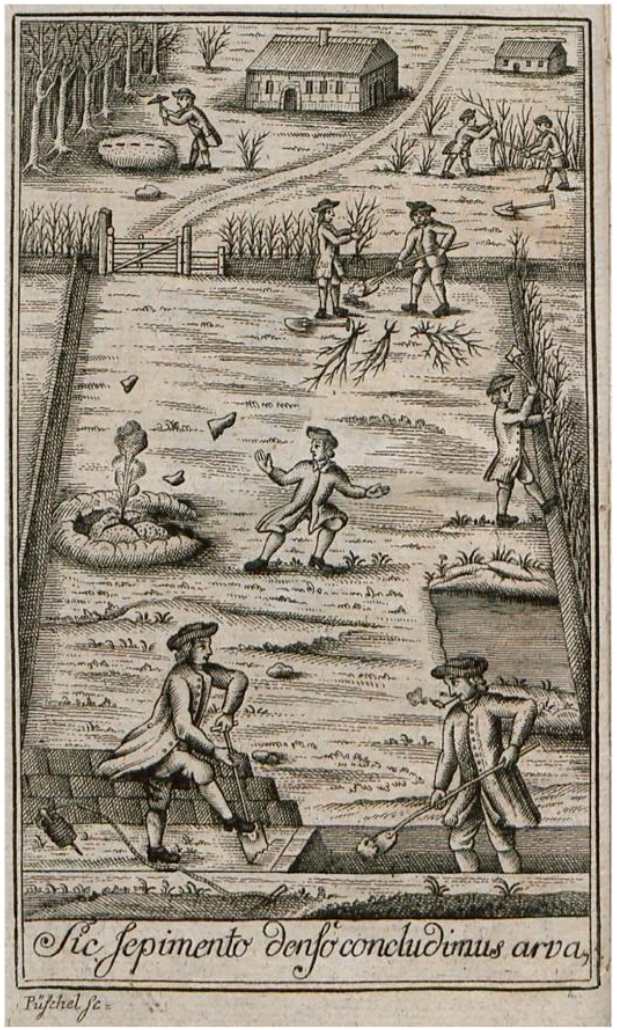
JRC work on LF information at EU / MS levels

- **Available information at EU level (in progress)**
  - policy expectations (what kind of information is needed?)
  - maping products (Copernicus HRL SWF)
  - Statistical surveys (LUCAS LF, EMBAL, LUCAS Transect...)
  - comparison of different typologies and definitions used
  - overview of available quantifications

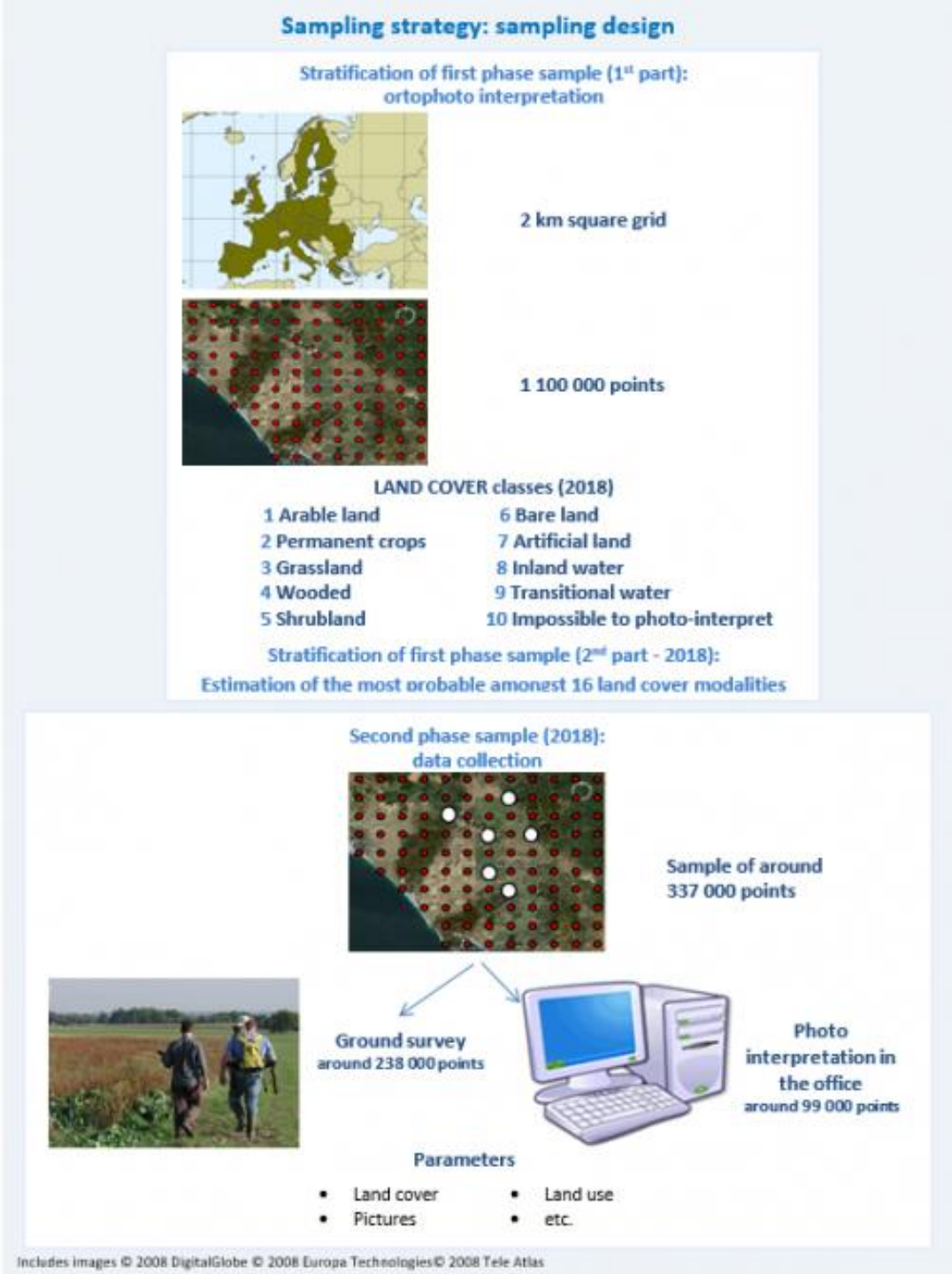
- **Information at MS level (in progress)**
  - Informal JRC survey in 2020 (→ Thanks!)
    - available information in IACS – LPIS on EFA and GAEC7 ?
    - any implementation problems ?



LUCAS survey

LUCAS (Land Use and Coverage Area frame Survey)

- a standardized survey methodology covering the whole EU
- every 3 years since 2006
- harmonized and unbiased area estimates for
  - land use / land cover
  - other land characteristics of EU policy relevance organized into dedicated modules (e.g. soil information…)



LUCAS LF module

- Planned for the next LUCAS survey (2022)
  - in 93,000 LUCAS points
  - **spatial representativeness** at MS level (and possibly also NUTS2),
  - consistent **quantification of LFs** for the EU and MS level,
  - with information on **different types** of landscape features,
  - compatible with data from **other sources** at EU level






A functional definition for the LUCAS LF module

Landscape features *(LF) are* ***small*** *fragments of natural or* ***semi-natural*** *vegetation* ***in agricultural landscape*** *which provide ecosystem services and support for biodiversity.*

(Image source: ELN-FAB, 2012: Functional agrobiodiversity: Nature serving Europe's farmers. ECNC, Tilburg -- drawing by Ben Delbaere)

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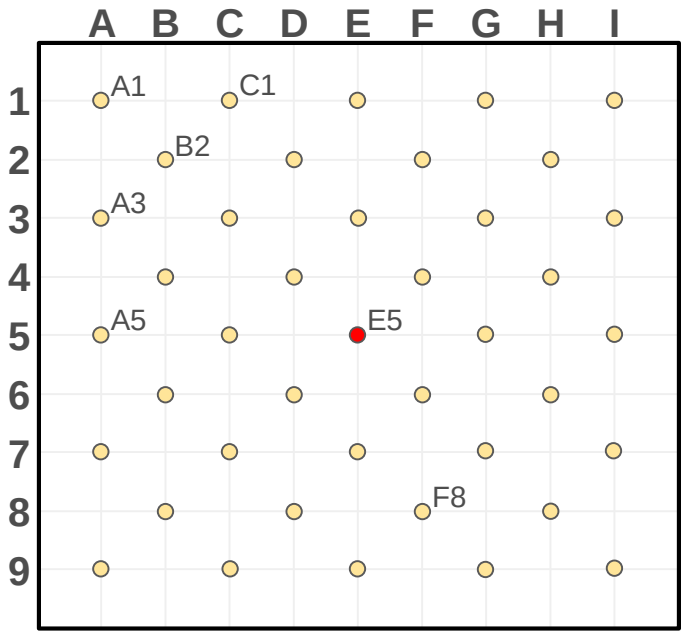
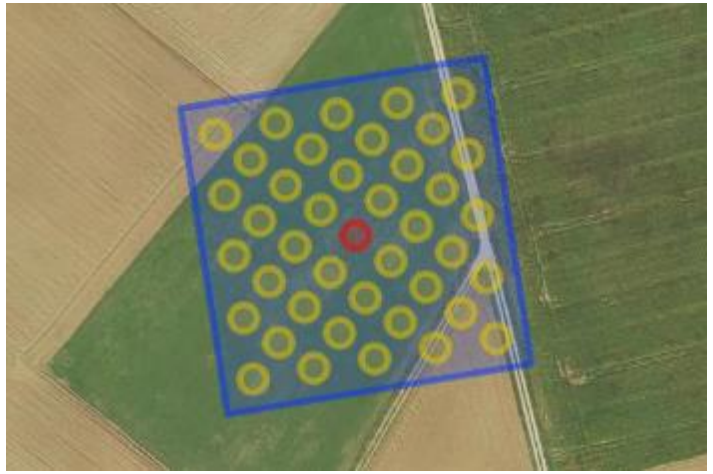
LUCAS LF module

- a grid of **sampling units**:
  - 41 “sub-points” (in a 1 ha “quadrat)
- a “cascade” of decisions:
  - is it in **agricultural land**?
  - if yes, is it **small**, **non-productive** & **semi-natural**?
  - if yes, which broad LF type?
- a simple typology:
  - **7 LF types**
  - **Overlap** possible
    e.g. a tree (primary LF) over a ditch (secondary LF)
- a two-step approach:
  - **office-based** work (photo-interpretation, phase 1)
  - **field survey** (phase 2)





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Not an LF

- elements within **industrial** or **urban** areas (including villages);
- elements within **private gardens, parks** that are connected to settlements;
- **large patches** of grass, shrubs, trees (forest), their mosaic, or abandoned agricultural land;
- grass stripes within **permanent crops** (e.g. between rows of fruit trees or vineyards);
- grass, shrubs or trees **next to semi-natural** vegetation (e.g. forests);
- trees in **agro-forestry** systems or in **orchards**.

Nevertheless, agro-forestry, grassland, forest etc. will be consistently surveyed in LUCAS core module as different land covers

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W: woody vegetation LF

- narrow strips (<20 m) covered by trees / shrubs (e.g. trees in line, hedgerows, riparian woody vegetation)
- small patches (<0.5 ha) covered by trees / shrubs (e.g. isolated trees, field copses)
- considered to incorporate the underlying grass layer too

G: permanent grass/herbaceous LF

- narrow strips (<20 m) covered by permanent herbaceous vegetation
- e.g. field margins, buffer strips, small fragments of abandoned land
- excluding farm tracks, grass strips in orchards, & next to grasslands

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T: temporary herbaceous LF

- narrow strips (<20 m) covered by **non-productive** crops (or flower-rich fallow vegetation)
- e.g. flower strips, wildlife strips
- (G has priority over T)

D: ditches and streams

- small water courses (e.g. streams, ditches, and small channels) and the adjacent marsh vegetation (width < 5m!)
- excludes channels lined with concrete

P: small ponds and small wetlands

- small patches (< 0.5 ha) covered by water bodies and/or wetlands (perennial vegetation)
- excludes reservoirs lined with concrete / plastic

S: stone walls, cairns and terraces

- piles of rock or stone (e.g. stone walls, clearance cairns)
- terraced agricultural landscapes (including the vertical “steps” and the flat “land block” parts)

C: cultural features

- “local elements of cultural heritage that provide ecosystem services”
- historical mounds (masses of earth protruding above a flat agricultural landscape)
- shall also be registered as **W** or **G**, too!
- can only be used in the field survey

LUCAS LF module: expected output

Survey – Statistical processing

Statistical quantification of the area of
LF in agricultural land (EU / MS / NUTS2?)

MS	W (woody LF)	G (perm. grass)	T (temp. grass)	D (ditches)	P (ponds)	S (stone)	C (cultural LF)	Total
EU								
BE								
BG								
CZ								
DK								
DE								
EE								
IE								
EL								
ES								
FR								
HR								
IT								
CY								
LV								
LT								
LU								
HU								
MT								
NL								
AT								

Area of landscape features in agricultural land

Combining LUCAS LF & Copernicus SWF

- Copernicus SWF **only covers woody** features (W)
- LUCAS LF for non-woody LF (grass margin, ditches, ponds, wetlands, terraces …)
- Combining Copernicus SWF layer with systematic representative ground survey data (LUCAS LF) for unbiased estimation
  - JRC explores options for an **unbiased regression estimator for SWF** (based on SWF & LUCAS data)
  - Pilot test on SWF validation points with LUCAS methodology
    - photo-interpretation of ortophotos
    - 2000 * 25 subpoints in 4 MS

Take home messages

- In **LUCAS 2022** a specific **module for landscape features** will be implemented
- This survey will complement the Copernicus SWF data:
  - to get **unbiased area estimators** of SWF **LF types**
  - To get information on **non woody LF types**
- **Simple, harmonized, science-based approach** LF definition and typology are needed to assess LF for the CAP context-layer
- These **simplified definitions** and survey protocols will be made **available to the MS** for their own LF surveying / monitoring activities
- Proposal for collaboration with MS on a voluntary basis.
  Contact the functional email address: JRC-wiki-CAP-SP@ec.europa.eu

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Thank you for your attention!






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