Improving high-resolution spatial information on agricultural land use management in Europe for economic land use modelling and the assessment of policy impacts

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The LAMASUS project

- **Aim:** To develop an integrated modelling framework to support policy needs related to the EU Green Deal
- The modelling toolbox will allow diverse stakeholders to investigate the impacts of different policy options and understand drivers and impacts of land use change
- A key input to the models = data on land use management

Filling data gaps on land use management

- There is a lack of spatially-explicit information on how land is currently being managed
- Where available, it is often only for one year and does not capture change over time
- **Our task:** to create a European land use management map using existing data sets that consider different cropland and grassland management intensities

Table 1: Cropland management classes developed in the LAMASUS project

Cropland Management Class	Definition
Irrigated arable cropland	Irrigated class in Corine land cover
Rainfed intensive arable cropland	Very high, high and medium energy inputs
Rainfed extensive arable cropland	Low and very low energy inputs
Irrigated permanent cropland	Irrigated or very high energy inputs
Rainfed intensive permanent cropland	High and medium energy inputs
Rainfed extensive permanent cropland	Low and very low energy inputs

Methodology

- Consultation with LAMASUS modelers on cropland (Table 1) and grassland classes (Table 2) needed for the models
- **Inputs:** CORINE land cover, high resolution livestock data (compiled from national statistical offices), grazing estimates (compiled and expert knowledge), energy input layer (Rega et al., 2020, https://doi.org/10.1016/j.landurbplan.2020.103793)
- Rule-based allocation of CORINE classes into land use management classes based on energy inputs and irrigation (for cropland) and livestock density thresholds and maps of grazing probability (grassland) to produce the map (Figure 1)

Table 2: Grassland management classes developed in the LAMASUS project

Grassland Management Class	Definition
1 Very high-density managed pasture system	Grazing livestock > 2 LSU/ha in grazing areas
2 High density managed pasture system	Grazing livestock 1 to 2 LSU/ha in grazing areas
3 Moderate density managed pasture system	Grazing livestock 0.5 to 1.0 LSU/ha in grazing areas
4 Low density managed pasture system	Below 0.5 LSU/ha in grazing areas
5 Very high-density managed grassland	Grazing livestock > 2 LSU/ha outside of grazing areas (fed, mowed)
6 High density managed grassland	Grazing livestock 1 to 2 LSU/ha outside of grazing areas (fed, mowed)
7 Moderate density managed grassland	Grazing livestock 0.5 to 1 LSU/ha outside of grazing areas (fed, mowed)
8 Low density managed grassland	Below 0.5 LSU/ha outside of grazing areas (fed, mowed)
9 Rough grazing	Livestock present on moors, heathland, shrubland
10 Silva-pastoral agroforestry	Grazing livestock in agroforestry, permanent cropland, heterogenous cropland
11 Managed semi-natural and natural grassland	Grazing livestock in natural grassland classes (not covered by rough grazing)
12 Unmanaged semi-natural and natural grassland	No livestock, natural grassland, shrubland, heathland classes, transitional woodland, sparse vegetation

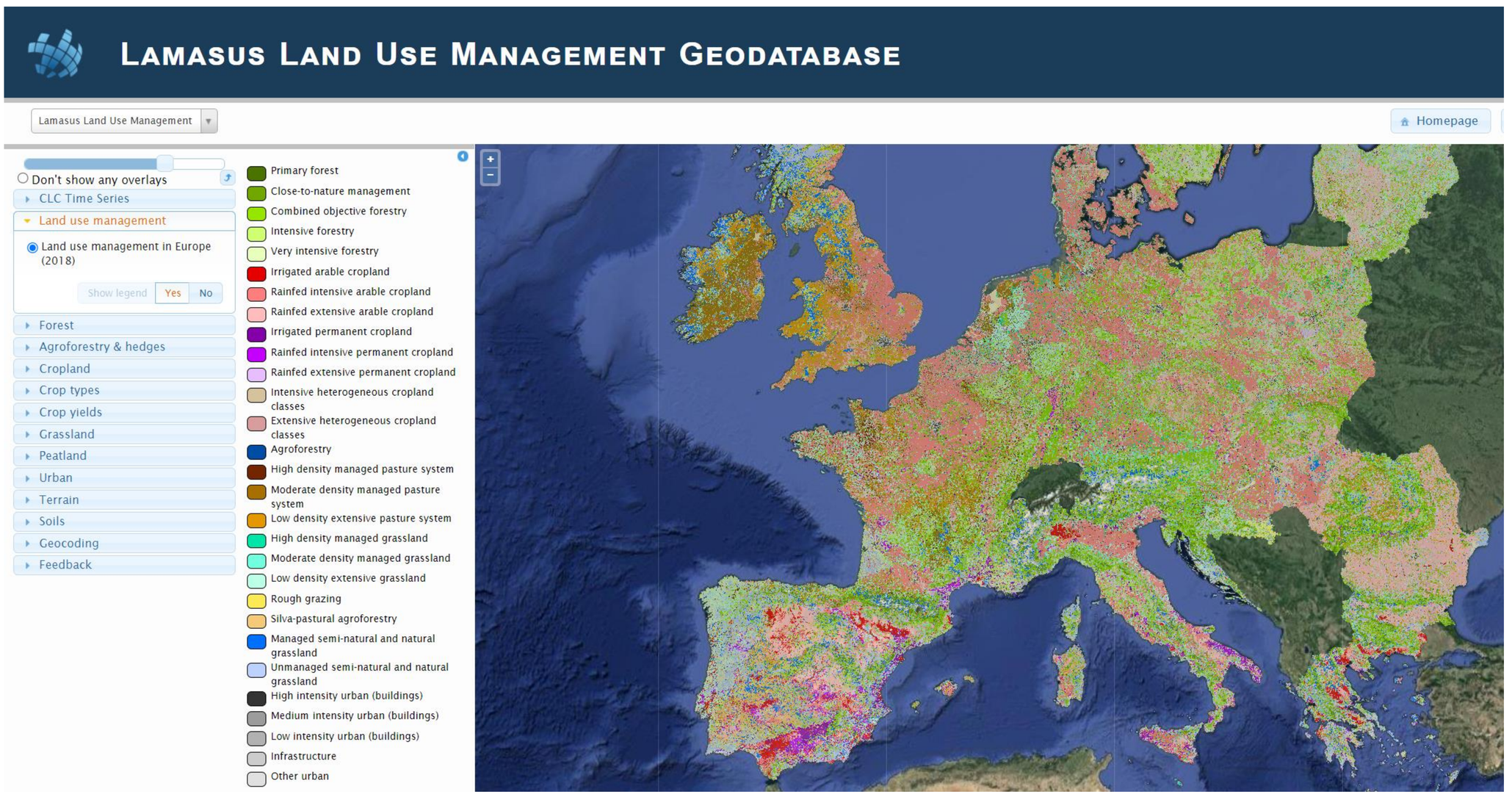

Figure 1: The land use management map for Europe based on application of the rules to CORINE land cover and other input data sets. A beta version of the map can be viewed on Geo-Wiki (https:\\www.geo-wiki.org)

Updates to the map will be available shortly.

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