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Landscape functionalities of farming activities

the case studies of Lunigiana (Tuscany, Italy)

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Study area

Lunigiana (973 km²) is the N-W part of Tuscan region, central Italy. It is a mountainous area: 54.9% of the surface is higher than 500 m and 86,0% exceeds the 12.5% of slope.

Aim & methodology

The **aim** was to explicit the functional relationships between farming activities and landscapes. The **methodology** was addressed to a progressive focus on signs (generated by "farming units" and farm buildings) summarized in farming systems and related to a farm sample.

1 Territorial framework

- Survey of indirect sources of information to set a **cognitive framework**.
- Interviews to local stakeholders involved into the conservation and promotion of the local resources.

2 Agri-territorial framework

Slope and aspect data crossing with spatial analysis shapes (buffers)

geopositioning of farmhouses

Generation of buffers:
 •proximal: 7.1 ha
 •peripheral: 50.2 ha

territorial data

overlay & ranking

slope
4 classes

aspect
4 classes

Potential farm mechanization
% buffer with slope <12.5%

Favorable aspect
% buffer with aspect from S-E to N-W

description of the areas surrounding farmhouses

main driving factors of farmers' choices

3 Farming framework

On farm surveys to collect data on "farming units" and farm buildings and their combination into farming systems.

"Farming units": land uses aggregated for homogeneous landscape attributes.

meadows: stable open spaces, used as pasture or for growing hay

woods: wide volumes with dense and homogeneous texture

groves: spaces with coarse texture, where each single element (tree or row) is well readable

arable land: open spaces seasonally modified for tilling or crop rotation.

intensive crops: spaces with dense and defined signs

Farm buildings: expression of complementary activities, typifying landscape profiles.

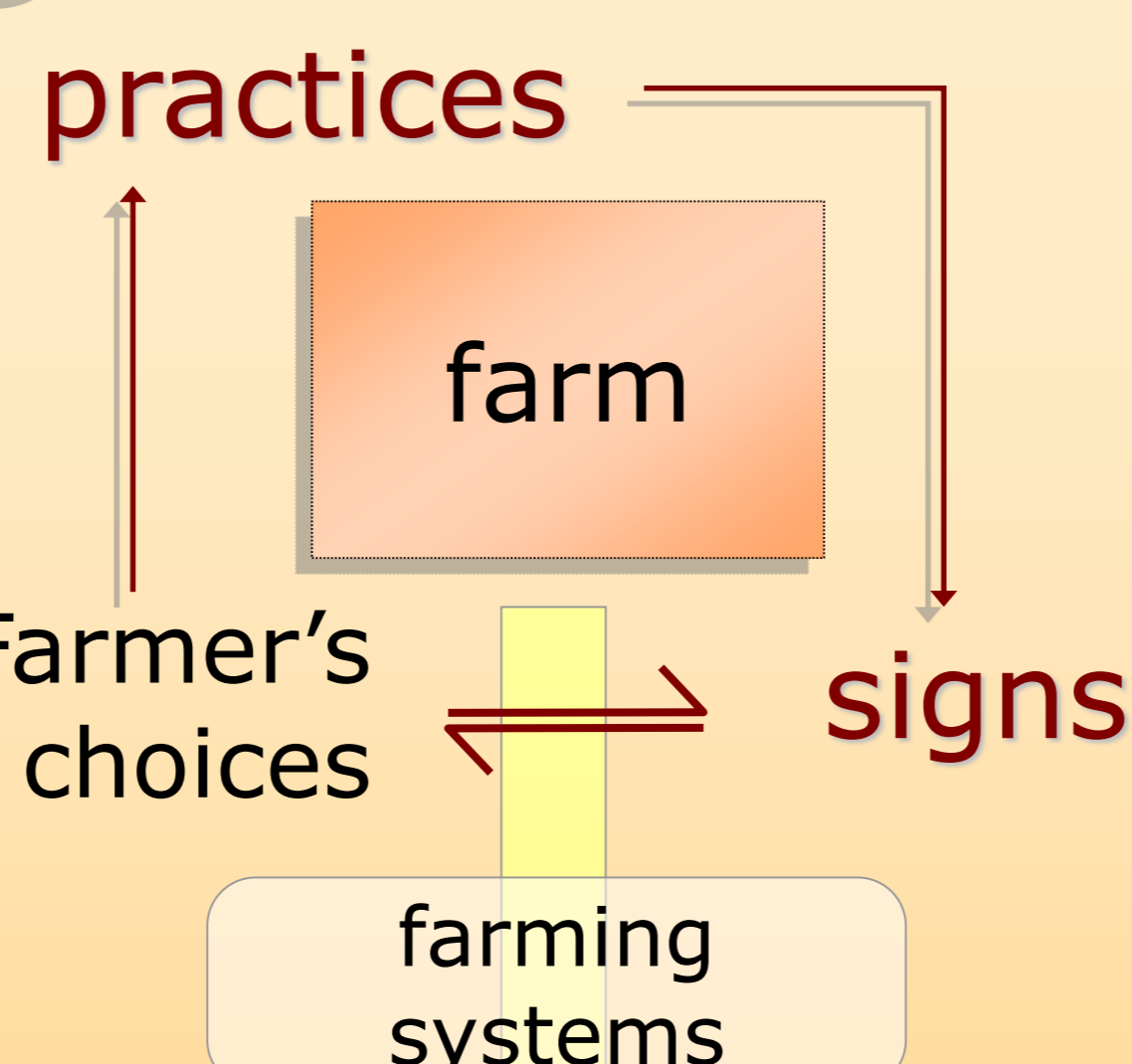
- **livestock** buildings (e.g. barns, sheds, etc.)
- **drainage systems** on slope surface (e.g. terraces, benches, etc.)
- buildings for **food processing**
- **agritourism** accommodations

1 Territorial framework



2 Agri-territorial framework

3 Farming framework

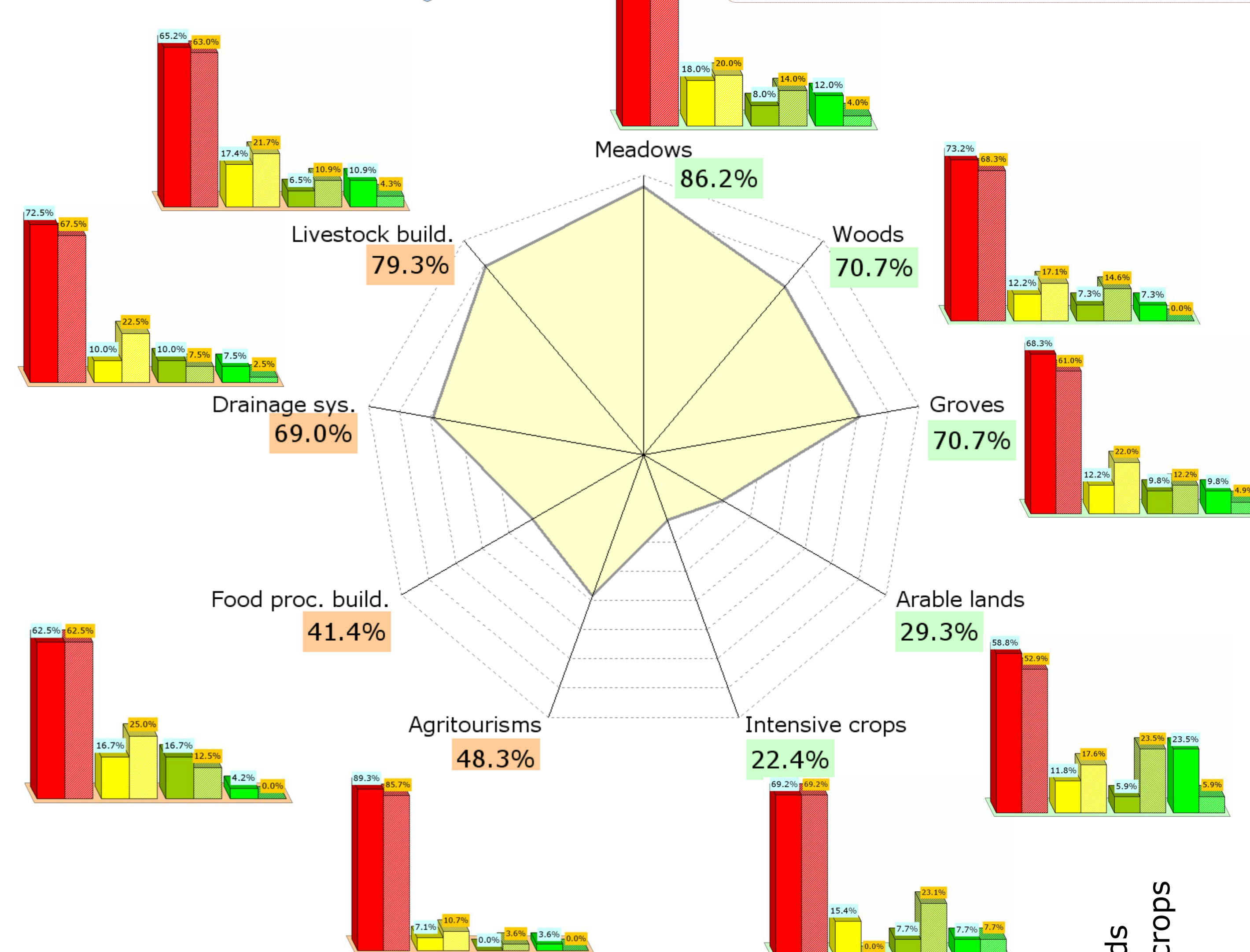
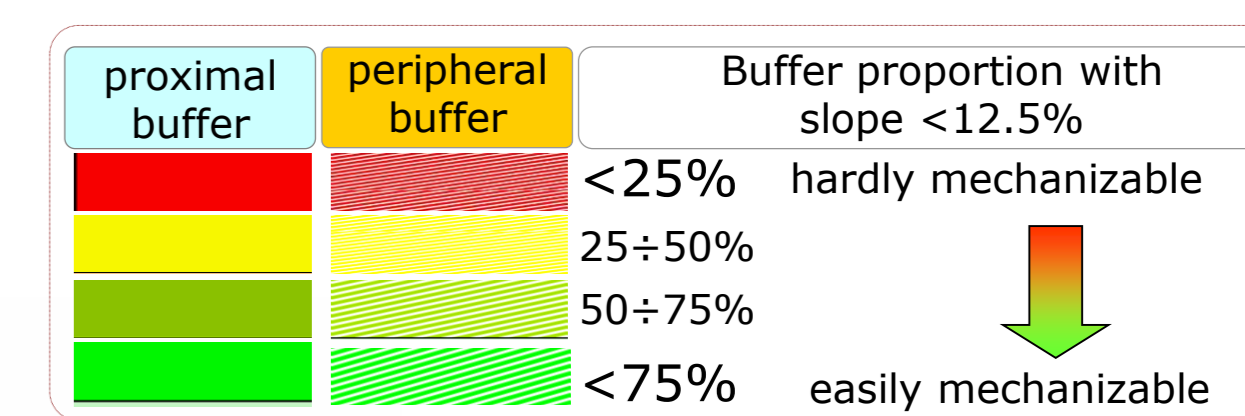


landscape functionalities

Results and discussion

The 60% of farms has an agri-territorial surround scarcely mechanizable, both the proximal and the peripheral buffers.

Signs recurrence (farm buildings on right and "farming units" on left) and histograms of their proportional distribution as function of the farm surroundings mechanizability.



Recurrence of the farming systems (left) and "farming units" combinations (right).

Outlines from the co-presence of "farming units" and farm buildings, and from their combination in farming systems:

- the great part of farms has three or two "farming units";
- the most frequent association groups meadows, woods and groves;
- the majority of the agritourisms are associated with two units and frequently located in scarcely mechanizable surroundings;
- the meadows production is almost completely (88%) used as pasture.

Number of "farming units"	Proportion on the farm sample	Woods	Groves	Arable lands	Intensive crops	Meadows
5	3.5%					
4	5.8%					
3	43.1%					
2	27.6%					
1	8.6%					

Conclusions

Landscape functionalities, as answers to the agri-territorial constraints are expressed:

- mainly by a mix of matrix with different textures, based on the co-existence of meadows, woods and groves (**mixed farming systems**)
- secondarily by the concentration of dense matrix, based on intensive crops, optimizing the hill "terraced-belt" for high quality viticulture and for olive and fruit groves (**specialized cropping systems**).

- The **maintenance** of traditional fenced meadows associated with extensive livestock;
- the **active conservation** and protection of transhumance routes (*tratturi*) and summer pastures (*alpeggi*);
- the **recovery** of abandoned woods units, through innovative agricultural practices (i.e. grazing of rustic species);
- the **betterment** of rural houses and small towns through agritourism activities.

The **"active management"** of the present agrarian landscape is possible conjugating the **traditional complexity** of the farming systems and **new farming styles** needed to ensure the economic competitiveness of this system.

Key references

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