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Framing land abandonment and its consequences on soil and vegetation changes

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A significant increase in forest areas has been observed in the last decades in Europe due to the abandonment of agricultural activities but also thanks to the implementation of reforestation/afforestation projects. These changes in land use have consequences in soil processes (e.g. erosion rates, accumulation of organic matter, humification, leaching, podzolisation), water and nutrient cycle, or productivity, amongst others. This new situation deserves an analysis of the causes and consequences in different scenarios, as the advantages and disadvantages of land abandonment can be different according to particular circumstances.

In ordinary local soil surveys, some of the most widely used indicators to evaluate soil changes are organic carbon, nutrients and pH. Variations of these key soil properties can also be used to evaluate the consequences of land abandonment.

On the landscape scale, changes in vegetation cover provide valuable information to analyse and evaluate the extent of land abandonment and its impacts on ecosystem functions and services. The re-establishment of natural vegetation can be seen as an invasive process by shrubs or trees, but it also can be considered as a process of natural restoration of these abandoned lands.

This study will cover different soils from different study areas in Soria (Spain; 500 mm annual rainfall and 11ºC of average temperature); in Pula, Sardinia (Italy, 500 mm and 17ºC); in Acquaviva delle Fonti in Bari (Italy, 560 mm and 15.3ºC); in Malta (600 mm and 18ºC) and in the Vidzeme upland, central part of Latvia (Latvia, 703 mm and 5.8 ºC). The variations of the abovementioned indicators will be considered in these different scenarios after several decades of abandonment of the agricultural activities.

The analysis will also address the diversity of driving forces related to land productivity, population structure, socio economic conditions and/or policy measures which are leading to land abandonment with different intensities and consequences. This work will help to understand and summarize these driving forces and what the positive or negative consequences are of land abandonment in different regions beneath different edaphic and climatic conditions.