

Temporal dynamics of plant succession in abandoned field in Mediterranean mountain areas: farming terraces and sloping fields (Iberian System, Spain)

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Cropland abandonment is an important problem in mountain areas worldwide. This process represents the change from an agricultural management to an abandoned land in which a complex plant succession process occurs, with important hydromorphological effects, and consequences in water resources availability and soil erosion. Literature indicates that plant succession depends on multiple natural factors (soil properties, topography, climate, lithology, and distance to natural covers...) and anthropogenic factors (age of abandonment, management of each field during the cultivation period and after the abandonment...). Despite the advances, much is unknown about the vegetation succession, due to the complexity of ecological and social conditions in which land abandonment occurs. Recently, it is shown that only local factors can explain the heterogeneity of the process (Burel and Baudry, 2002; Jouba and Alados, 2012).

In this work, we analyze the diversity of vegetation cover in abandonment fields in Cameros Viejo (Iberian System, Spain), related to the different field patterns (terraces and sloping fields) and the age of abandonment. Agricultural lands were delimited using aerial photographs from 1956 and 1978. The current land cover was obtained from SIOSE (Information System of Land Occupation in Spain). According to our cartography, cultivated land occupied as much as 15,491 ha (39% of the area), remaining abandoned 14,505 ha by 1978. Farming terraces occupied 55.9% of the abandoned area, and 44.1% as sloping fields. On the other hand, our cartography highlights the complexity of current land cover of abandoned fields in a landscape matrix of scrubland. Our results suggest that ecological succession is faster in farming terraces than in sloping fields, mostly until scrubland phase is attained. They also suggest that current land cover is better explained by the physical conditions of each field than by the abandonment age.

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