



## **Land degradation due to agricultural land abandonment in Southeast Spain**

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Land abandonment is nowadays widely spread in Mediterranean countries and is expected to increase, due to changing European policies, urbanisation and climate change. Several studies showed that land degradation will increase after abandonment, especially under semi-arid conditions. The main cause of increased erosion is the absence of ploughing and a slow vegetation recovery, which results in the formation of soil crusts and bare spots with low infiltration rates, leading to more concentrated runoff and gully erosion.

To assess the extent and impact of agricultural land abandonment in relation to land degradation we analysed land use, soil properties and erosional processes within a semi-arid catchment in Southeast Spain. Our results showed that soil properties can recover after abandonment to the level of semi-natural shrublands, but this improvement is slow, e.g. only after 40 years of abandonment the soil organic carbon content was comparable to soils under semi-natural vegetation. This means that these fields are especially vulnerable to erosion during the first years after abandonment. Within the study area 17% of the agricultural land was abandoned and more than half of these fields experienced moderate to severe erosion.

Gully erosion and piping through terrace walls appeared to be the main erosional processes. From a data set of almost 300 terraces we analysed which factors determined terrace failure. Variables that significantly increased the risk of terrace failure were land abandonment, steeper terrace slope, loam texture, valley bottom position and shrubs on the terrace wall. To mitigate land degradation after abandonment the soil

and water conservation practices should focus on reducing the risk of concentrated flow, and revegetation of critical spots in the landscape with indigenous grass species to prevent terrace failure.