Current and Former Agricultural Uses influence Natural Land Restoration

Austrian and Italian scientists have recently investigated the natural reforestation mechanisms in four regions of the Eastern Alps, where agricultural land-use has declined by up to 67% in the past 150 years. They have shown that the previous and current uses of these formerly cultivated lands are major factors influencing natural reforestation. The results of the study could be useful when assessing possible environmental impacts of agricultural policies.

During the last decades, about 40% of the farm holdings in the European Alps have been abandoned. On average, this corresponds to 20% of formerly cultivated land. Scientists have shown the positive (decrease in the use of pesticides) and negative (destruction of semi-natural habitats) impacts of abandoning farmland. Some studies have also investigated the global influence of natural and anthropogenic factors on natural reforestation occurring in these abandoned areas and have shown that the most important factors driving natural reforestation are the altitudinal climate gradient, soil characteristics, seed dispersal by wind and the type and intensity of the former land-use. However, little research has been devoted to the effects of these factors on the intensity of the reforestation.

Austrian and Italian researchers have recently used a mathematical model to examine the specific impacts of these natural and human variables on the density of trees on formerly cultivated lands where natural reforestation occurs. They focussed their study on four agrarian regions in the European Alps where land abandonment has occurred. The regions were chosen for the difference in their natural and socio-economic characteristics.

The three key findings of their study are as follows:

• In the past 150 years, between 8% and 67% of former farmland has been abandoned depending upon the natural-site and the socio-economic conditions of the region. Researchers have observed natural reforestation on the majority of these lands.

• Seed dispersal and current land-use are shown to be the key parameters influencing natural reforestation. Scientists have shown that the nearer the abandoned area to old trees, the higher the reforestation rate. In addition, they have pointed out that agricultural uses such as grazing and mowing reduce natural reforestation on formerly cultivated lands.

• Finally, the less intensive the former farming and the longer the area has been abandoned, the higher the tree density after natural reforestation.

The authors conclude that for each of the four regions of the Eastern Alps analysed, abandoned areas are subject to a large-scale natural reforestation process. They have shown that there is a significant influence of local anthropogenic and natural variables such as agricultural use and years since abandonment or seed dispersal on the regional landscape structures and patterns. Finally, the researchers highlight the need to take these impacts into account in order to better understand the cultural landscape transformation upon abandoning cultivated land.

In this context, European statistics show a clear trend towards reduction of the European agricultural area. One of the main drivers in this process seems to be the Common Agricultural Policy, which, through the distribution of subsidies and incentives, influences the maintenance or change in agricultural land uses. This study provides new insights that could be useful when assessing the environmental impacts of such policies on land restoration.


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