



Greenhouse gas management
in European land use systems

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Deliverable D2.2			
Title	Complete the set up of 12 GHG measuring sites along a Romanian forest management gradient		
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Lead participant	WP	Nature	Dissemination level
ICAS (11)	2	R	RE

Deliverable description

The aim of the task is to estimate the impact of the management gradient on the GHG fluxes (CO₂, CH₄, N₂O). Soil fluxes will be monitored using gas respiration chambers, while the above-ground carbon dynamic will be proxied by forest inventory and tree growth monitoring. The choice of the plots, which had to be realized quickly, was based on strong constraints which lead to the choice of common beech stands (*Fagus sylvatica* L.) for which the range of management types is large. Beech is the first species in Romania in terms of total volume, and it occupies around 30 % of the entire forest cover (over 2 Mio. ha).

The plots chosen are located in a forest district belonging to the Forest research and Management Institute that is well documented, accessible and diverse in terms of management practices. Its average elevation is 550 m. A wide range of management treatments was applied on several stands in this district. The main advantages of this location are: the presence of a large gradient of management types, the uniformity of the growing conditions due to a very homogeneous geology, low confounding factors, time stability; treatments have been applied for over 40 years.

The gradient put in place covers a very large range of management or treatment types: from unmanaged to high stands and to all-aged stands. The homogeneity of composition is quite good. However, among all the plots two are not beech stands: one is a black locust stand located in the bottom of a valley, the other one is constituted of meadow and hornbeam young trees and is typical of the extension of the forest edge. The gradient put in place is constituted of 5 high forest stands (even-aged) with varying thinning intensities, 3 of uneven aged stands, 1 of all-aged stand. The plots were chosen and settled. Inventories were made to analyse the stand structure and for a better description of the stand attributes. The results show a great contrast between treatments in terms of diameter distribution. The high variability in density or volume makes a contrast in GHG fluxes more probable. However, extreme situations were excluded and the values obtained are typical for the stands sampled, the representativeness of the plots selected is ensured.