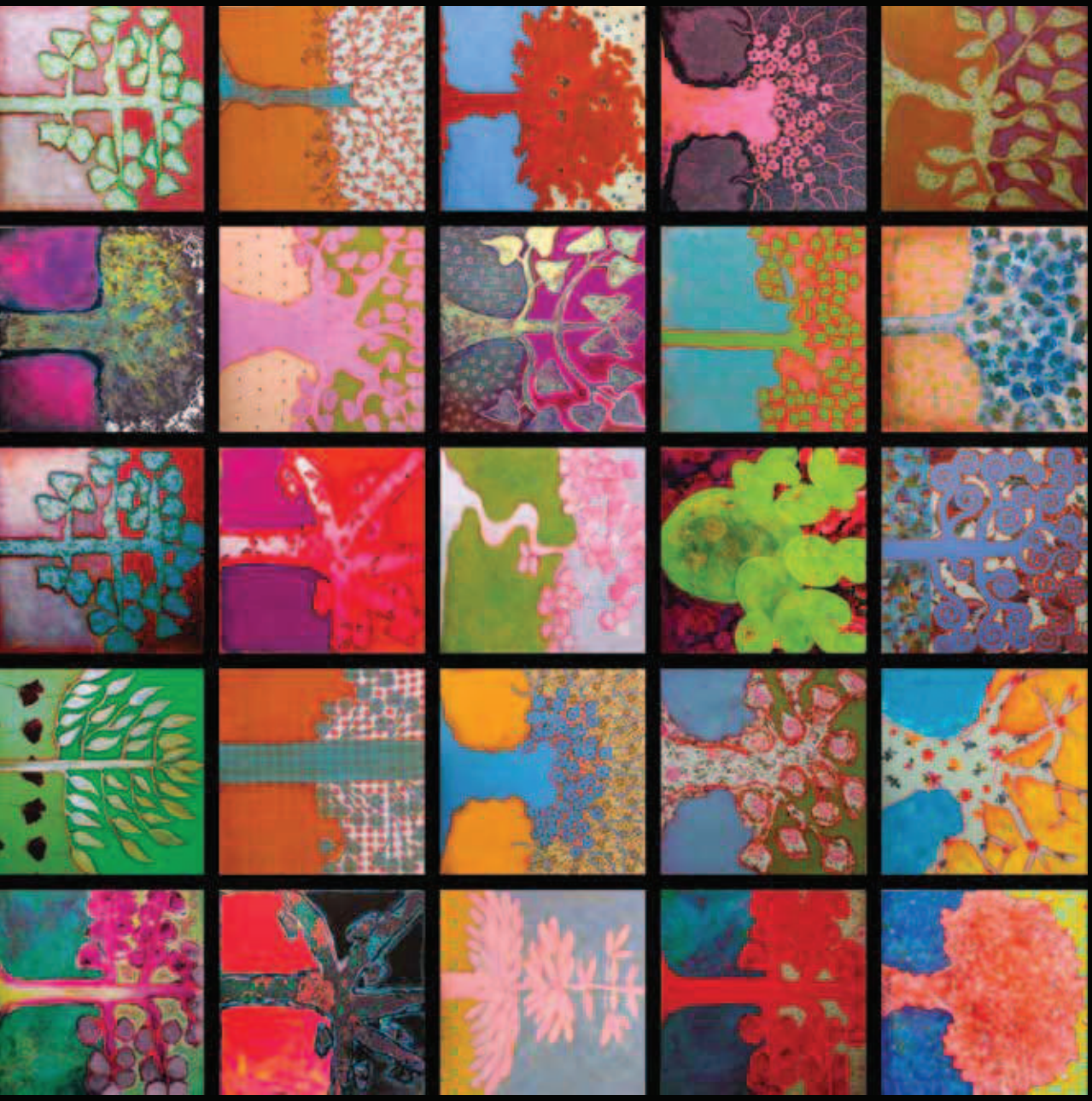




Book of Abstracts

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Mr Emmanuel MACRON
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Landscape approaches to tackle climate change, and achieve sustainable development and food security

Aerial view of the landscape around Halimun Salak National Park, West Java, Indonesia. Photo by Kate Evans/CIFOR

What is FTA?

The CGIAR Research Program on Forests, Trees and Agroforestry (FTA) is the world's largest research for development program to enhance the role of forests, trees and agroforestry in sustainable development and food security and to address climate change. CIFOR leads FTA in partnership with Bioversity International, CATIE, CIRAD, INBAR, Tropenbos International and the World Agroforestry Centre. FTA's research contributes to 14 of the SDGs.

What do we work on?

- Tree genetic resources
- Forests, trees and agroforestry for smallholder livelihoods
- Sustainable value chains and investments
- Landscape dynamics, productivity and resilience
- Climate change adaptation and mitigation
- Gender, evaluation and impact assessment



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Effect of the land use on the carbon storage in the soil fractions in the South of Portugal

Ferreiro-Dominguez N.¹ (nuria.ferreiro@usc.es), Paulo J.², Palma J.², Rigueiro-Rodríguez A.³, Mosquera-Losada M. R.⁴

¹Crop production and project engineering, Univ. Santiago Compostela, Lugo, Lugo, Spain; ²ISA, Lisbon, Portugal; ³Univ. Santiago Compostela, Lugo, Spain; ⁴Crop production and project engineering, Univ. Santiago Compostela, Lugo, Spain

Soils play an important role in climate change mitigation by storing carbon and decreasing greenhouse gas emissions in the atmosphere. The carbon associated to the different soil fractions can vary over time due to several factors including biological system characteristics, climatic conditions or land use. The aim of this study was to evaluate the amount of carbon stored in each soil fraction (250–2000 μm , 53–250 μm , and <53 μm) in the three main land uses traditionally encountered in the semi-arid areas of the South of Portugal (natural forest vegetation, agroforestry and agricultural). The experiment was carried out in three plots of the Perímetro Florestal of Contenda located in the Baixo Alentejo province, South of Portugal. The three selected plots were: i) a plot with natural forest vegetation, dominated by uneven aged *Quercus rotundifolia* L. trees established through natural regeneration, ii) a plot with an agroforestry land use (montado), in which uneven aged *Quercus rotundifolia* L. trees were established and are currently at a low density (66 trees ha⁻¹) and combined with an extensive grazing with sheep, iii) a plot with an agricultural land use in which during the last six years the soil was tilled to sow a mixture of grasses (triticale, oat and wheat) and legumes (clover) for livestock feeding. In these plots soil samples were collected at a soil depth of 25 cm in March 2017. In the plots with natural forest vegetation the soil samples were collected under the trees and in the agroforestry plots the soil samples were collected under the trees and in those areas not affected by the trees. In the laboratory, soil samples were physically fractionated in macroaggregates (250–2000 μm), microaggregates (53–250 μm) and silt + clay (< 53 μm). The percentage of carbon in the three soil fractions was analysed using a LECOTM CNS Elemental Analyzer. The percentage of carbon was used to calculate the carbon storage per hectare (Mg C ha⁻¹) in the soil fractions. The obtained results showed that the land use modified the carbon storage in the soil fractions, mainly due to the different inputs of organic matter to the soil and the management activities associated with each land use such as the soil tillage or the livestock grazing. In this study, the trees established in the plots increased the carbon storage per hectare in the macroaggregates and in microaggregates probably due to the high inputs of organic matter to the soil coming from the tree leaves and roots. Therefore, in semi-arid areas such as those in this study it could be recommended the implementation of agroforestry systems such as the montado as a land use to mitigate the effect of the climate change, allowing agricultural production.