

Towards an integrated assessment of the impacts of forest residue mulching following wildfire in eucalypt plantations in north-central Portugal

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In the framework of the EU-FP7 project RECARE (www.recare-project.eu) and, in particular, its WP6, the University of Aveiro partner has recently started testing two measures against the soil threat of post-fire erosion by water in an area in north-central Portugal, close to Coimbra that burnt during the summer of 2015. These measures – mulching with forest slash residues and contour ploughing – had been selected by the local and external stakeholders involved in the project, through two subsequent stakeholder workshops. While contour ploughing has still not taken place, the mulching was already carried out, using residues from eucalypt plantations as the burnt areas were dominated by eucalypt plantations, and applying them in a homogeneous fashion at two contrasting application rates, i.e. a “standard” rate of approximately 10 Mg ha⁻¹ and a “reduced” rate of about 3 Mg ha⁻¹. The standard rate was selected for having proved effective in reducing post-fire runoff and erosion in previous field studies in the region (Prats et al., 2012, 2014, 2015a), while the reduced rate had been found to be nearly as effective as the standard rate in a recent study in the hydraulic laboratory of the University of Coimbra (Prats et al., 2015b). Unlike the referred prior studies, however, the present study will also assess the impacts of mulching on two other soil threats – i.e. decline in soil organic matter and in soil biodiversity – and, ultimately, will compare the two measures in terms of their consequences for soil-based ecosystem services, using the framework being developed by RECARE (Schwilch et al. in Stolte et al., 2016).

The proposed presentation will show the first results on the effects of the two mulch application rates on post-fire runoff as well as the associated losses of sediments, organic matter/C and nutrients (N, P), and on selected indicators of soil biological activity and diversity.

Prats et al., 2015a (in press). LD&D (doi: 10.1002/ldr.2422)

Prats et al., 2015b. FLAMMA, 6 (3), 113-116.

Prats et al., 2014. STOTEN (doi: 10.1016/j.scitotenv.2013.08.066)

Prats et al., 2012. Geoderma (doi: 10.1016/j.geoderma.2012.02.009)

Stolte et al., 2016. EUR 27607 (doi:10.2788/828742, online)