



Soil bioindicators and weed emergence as affected by essential oils extracted from leaves of three different Eucalyptus species

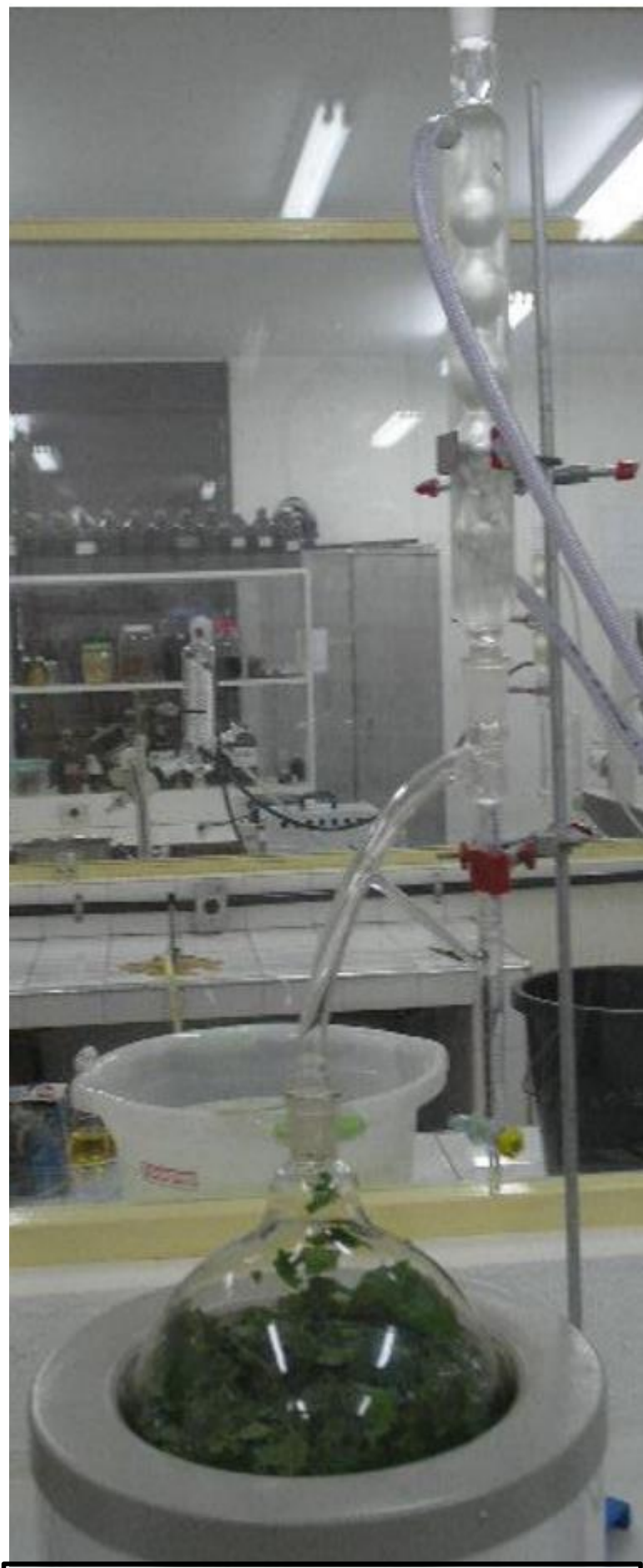
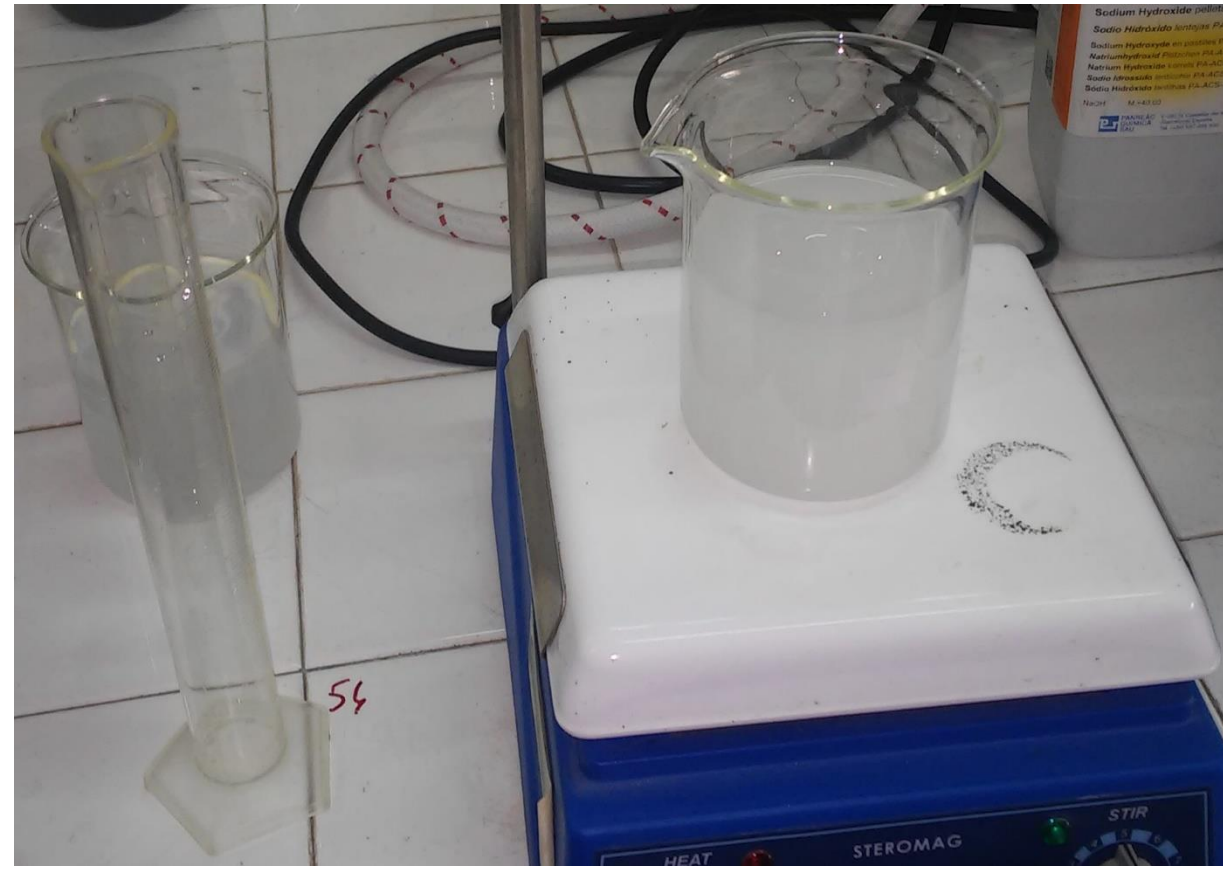




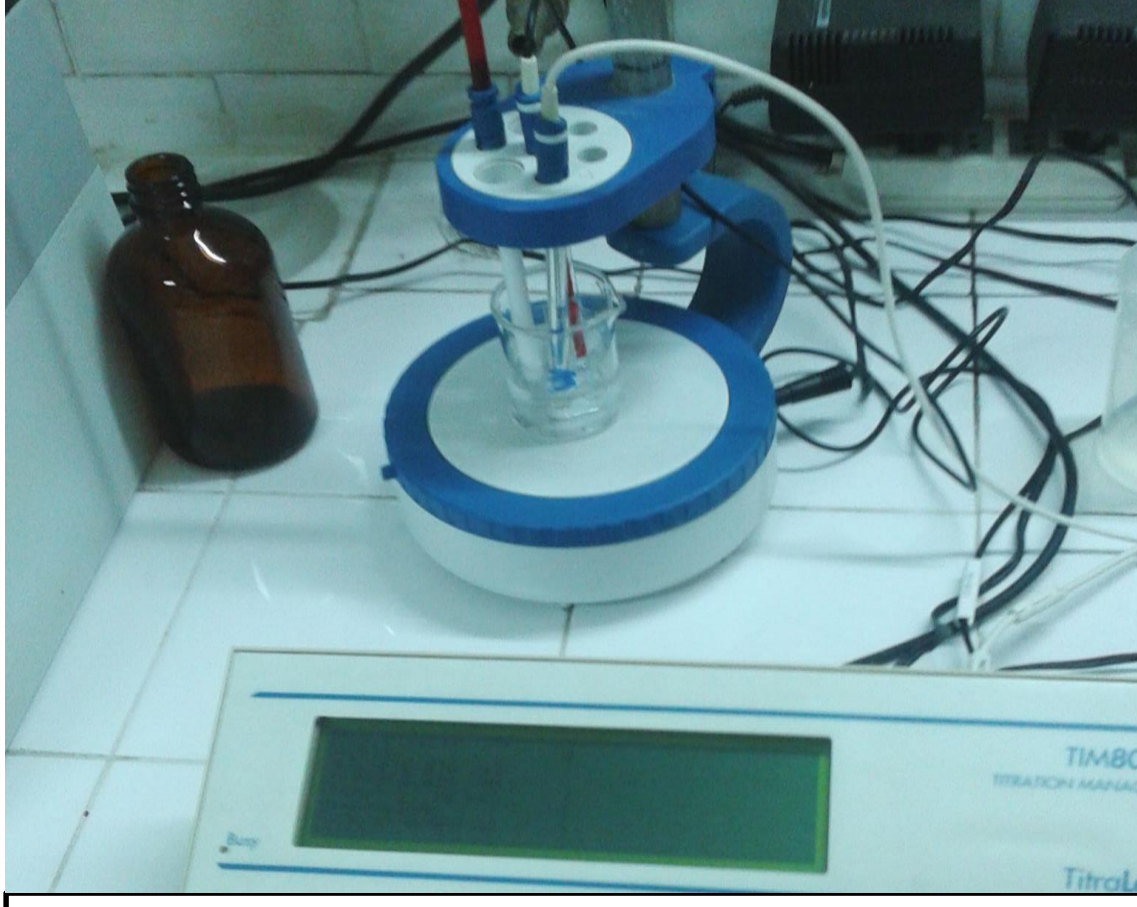


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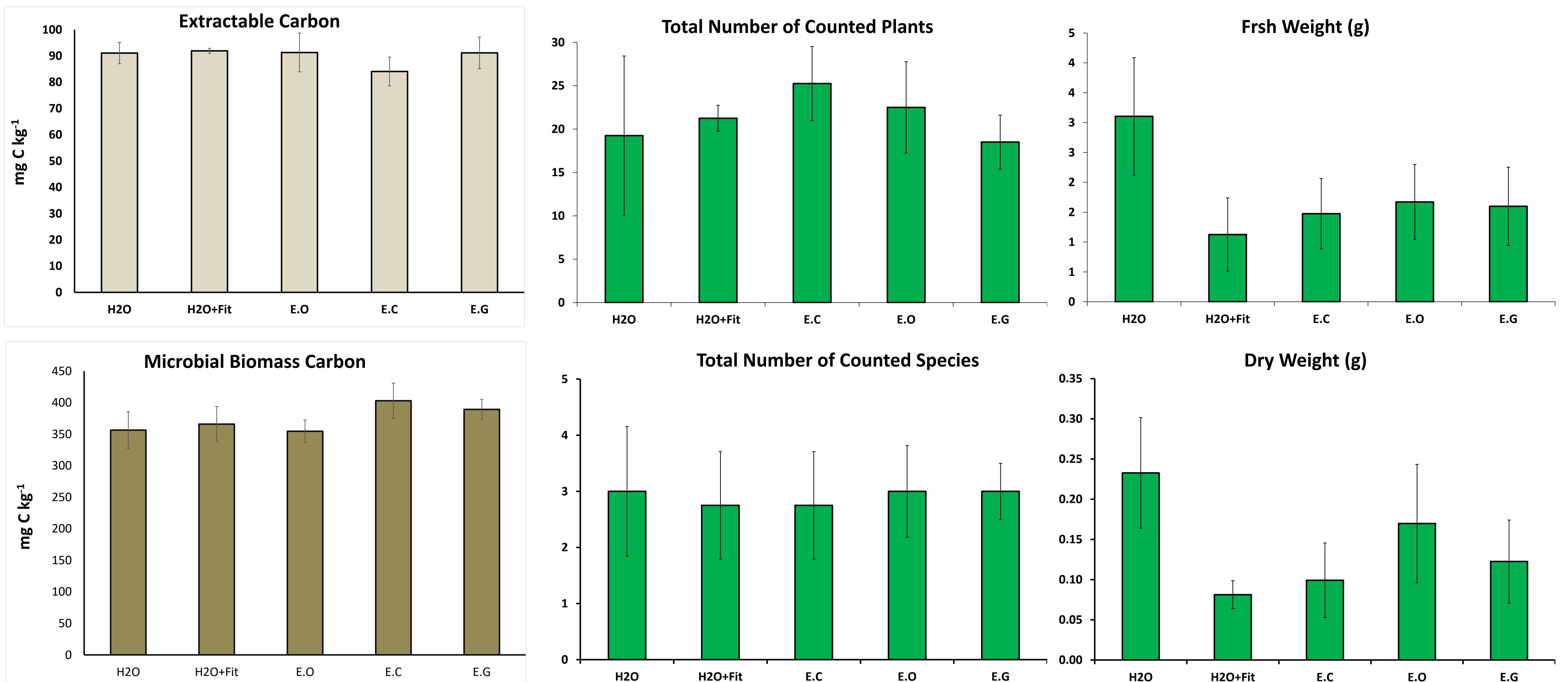
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Objective : The aim of this work was to evaluate the in vivo effects of essential oils (EOs) extracted from Eucalyptus leaves on both weed emergence and biochemical soil properties.

Material and methods

EOs Extraction	Soil Treatment	Plant analysis	Soil analysis
 <p>EO extraction from Eucalyptus (<i>Occidentalis</i>, <i>Camaldulensis</i>, <i>Globulus</i>) leaves by hydro distillation of Clevenger-apparatus method</p>	  <p>The three EOs with 8ml /L concentration were emulsified with 0,1% (v/v) Fitoil and applied on 12 aluminium pots , 8 pots treated with only water and water with fitoil were used as controls,</p>	  <p>1-Total number of plants 2-Number of identified plant species 3-Total dry weight 4-Total wet weight</p>	  <p>1-Extractable organic carbon 2-Carbon microbial biomass</p>

Results and Discussion



The two first treatments (H2O, H2O + Fitoil) are the controls. (E.O, E.C, E.G) are the treatments using essential oils extracted from different varieties of Eucalyptus leaves (*Occidentalis*, *Camaldulensis*, *Golobulus*). The flow of Microbial Biomass Carbon (MBC) and the extractable carbon (EC) was not significantly affected by any treatments comparing to the controls. The Eucalyptus EO (EEO) used, at fixed concentration equal to 8ml/L, under field conditions do not have any significant effect on the studied soil biochemical indicators.

For the weed germination and plant analysis parameters, the addition of (EEOs), have not introduced any effect comparing to the controls on the total number of counted plants and species. On the other hand, the significant reduction of the dry and fresh weight of the sprouted weeds was observed with the addition of fitoil as well as the other three treatments, which affect negatively the biomass growth of weeds. EEOs likewise the fitoil inhibit the biomass growth of weeds, further studies is needed to be done to confirm the potential effect of (EEOs) on weed germination.

Conclusion: According to the studied parameters of soil bioindicators (MBC and EC) and weed germination (total number of sprouted weeds species, dry and fresh weight), EEOs have no significant effect under field conditions on soil microorganisms and weed germination which disagree with some studies from the literature, especially the results of Verdeguer et al (2009), which demonstrated that EO from Eucalyptus camaldulensis inhibit completely both "*Amarantus hybridus*" and "*Portulaca oleracea*" seed germination and seedling growth, which disagree with the present in vivo findings on the same species (data were not shown in the poster).

References