

# LIVRO DE RESUMOS

3 A 5 DE JULHO DE 2024  
FACULDADE DE CIÊNCIAS DA UNIVERSIDADE DO PORTO

EVENTO ORGANIZADO PELA SOCIEDADE PORTUGUESA DE CIÊNCIAS DOS SOLOS EM PARCERIA COM A FACULDADE DE CIÊNCIAS DA UNIVERSIDADE DO PORTO E COM O GREENUPORTO



**Ficha Técnica:**

**Título:** Encontro Anual das Ciências do Solo 24: Solo, Pilar de uma Só Saúde

**Autores:** Sociedade Portuguesa da Ciência do Solo, GreenUPorto & Faculdade de Ciências da Universidade do Porto

**Editores:** Sociedade Portuguesa da Ciência do Solo

**Suporte:** Eletrónico

**ISBN:** 978-989-99665-1-2

## **Comissão Organizadora**

Ruth Pereira (GreenUPorto, FCUP)

Anabela Cachada (CIIMAR, FCUP)

Alexander Cornejo (Comissão de  
Viticultura da Região dos Vinhos Verdes)

Carlos Alexandre (MED, UÉvora)

Nuno Cortez (ISA, ULisboa)

## **Núcleo Local (UPorto/GreenUPorto)**

Bárbara Barros (GreenUPorto, FCUP)

Beatriz Fernandes (GreenUPorto, CIIMAR, FCUP)

Catarina Ganilho (GreenUPorto, FCUP)

Cristiana Paiva (CIIMAR, FCUP)

Diogo Machado (GreenUPorto, FCUP)

Joana Serrão (GreenUPorto, FCUP)

João Pacheco (GreenUPorto, FCUP)

Rute Crespo (GreenUPorto, FCUP)

Sirine Bouguerra (GreenUPorto, FCUP)

Sofia Machado (GreenUPorto, FCUP)

Tatiana Andreani (GreenUPorto, FCUP)

Verónica Inês Nogueira (CIIMAR, FCUP)

## **Comissão Científica**

Ruth Pereira (GreenUPorto, FCUP)

Anabela Cachada (CIIMAR, FCUP)

Carlos Alexandre (MED, UÉvora)

Nuno Cortez (ISA, ULisboa)

Paula Alvarenga (ISA, ULisboa)

Ana Marta Paz (INIAV)

Maria do Carmo Horta (IP Castelo Branco)

Tomás de Figueiredo (CIMO, IP Bragança)

João Coutinho Mendes (CITAB, UTAD)

Maria da Conceição Gonçalves (INIAV)

Tiago Natal da Luz (CFE, UCoimbra)

José Paulo Sousa (CFE, UCoimbra)

Carla Patinha (Geobiotec, UAveiro)

Eduardo Ferreira Silva (Geobiotec, UAveiro)

Sofia Costa (CBMA, UMinho)

Isabel Maria Oliveira Brito (MED, UÉvora)

José Casimiro Martins (INIAV)

José Manuel Rato Nunes (IP Portalegre)

Manuel Madeira (ISA, ULisboa)

Maria Manuela Abreu (ISA, ULisboa)

Miguel Brito (IPVC)

Tiago Ramos (MARETEC, IST, ULisboa)

Patrícia Ventura Garcia (cE3Cc, Universidade dos Açores)

Teresa Lino Neto (CBMA, UMinho)

## ÍNDICE GERAL

NOTA DE ABERTURA	9
<b>NOTA DE ABERTURA</b>	<b>10</b>
ORADORES CONVIDADOS	11
<i>Soil microbiomes and one health</i>	12
<i>Climate change projections and implications in agriculture: viticulture as a case study</i>	13
<i>Exploitation of plant-microbe interaction for soil bioremediation</i>	14
BIODIVERSIDADE DOS SOLOS	15
<i>Monitorização da saúde do solo em função das práticas vitivinícolas: Estudo de caso na Quinta do Casal da Granja</i>	16
<i>Indirect influence of land management on soil fauna diversity and N cycling through changes in litter quality in a Mediterranean agro-forest system</i>	17
<i>Integrating morphological and molecular approaches for assessing soil biodiversity in agroecosystems</i>	18
<i>Exploring the interactions between soil properties, cultivar, management practices and microbial community physiological profile in wheat production - the WHEATBIOME project</i>	19
<i>Characterization of beneficial bacteria isolated from vineyards in Douro Wine Region: potential for development of biofertilizers and biopesticides</i>	20
<i>Diversity of entomopathogenic fungi (EPF) in Portuguese vineyard soils</i>	21
<i>Exploring soil biodiversity in different land uses: Preliminary Insights from Côa Valley</i>	22
<i>Influence of cover crops on weed management in horticultural crops</i>	23
<i>Efeito do uso de microrganismos benéficos no desenvolvimento de azevém</i>	24
MATÉRIA ORGÂNICA E	25
FERTILIDADE DO SOLO	25
<i>Análise de carbono orgânico, inorgânico e elementar: a solução fundamental para a análise de solos</i>	26
<i>Carbon accumulation and fertility islands driven by single trees in Mediterranean oak woodlands</i>	27
<i>Evaluation of compost application on soil organic carbon sequestration and physic-chemical properties in olive grove agroecosystems of NE Portugal</i>	28
<i>Sistemas agrícolas regenerativos, estequiometria de coenzimas no solo e aquisição de fósforo</i>	29
<i>Teste de Haney</i>	30
<i>Nutrients concentration and uptake by ryegrass after soil amendment with olive-pomace-based composts</i>	31
<i>Assessment of polyphenolic content during co-composting of sewage sludge and vineyard pruning</i>	32
<i>Efeito do revolvimento no processo de compostagem de bagaço de uva com engaço</i>	33
<i>Avaliação do potencial fertilizante de compostados orgânicos obtidos a partir da planta invasora jacinto-de-água <i>Eichhornia crassipes</i> (Mart.) Solms</i>	34
<i>Incorporação de biomassa foliar de eucalipto no solo: haverá benefícios para fertilidade?</i>	35
<i>Efeitos da aplicação de um composto em propriedades do solo num olival intensivo (var. Galega vulgar)</i>	36
<i>Efeito das condições de extração na avaliação da fitotoxicidade do composto através do índice de germinação</i>	37
<i>Resposta da alfaca à aplicação de compostados de refugo de kiwi com palha</i>	38
<i>Avaliação da qualidade de compostos provenientes da co-compostagem de lamas de depuração</i>	39
<i>Desenvolvimento de vermicompostos à base de resíduos urbanos-projeto Greenvalue</i>	40
<i>Caracterização microbiológica de solo tratado com compostos orgânicos de jacinto-de-água <i>Eichhornia crassipes</i> (Mart.) Solms</i>	41

## Nutrients concentration and uptake by ryegrass after soil amendment with olive-pomace-based composts

Ana Caroline Royer<sup>1,2,3\*</sup>, Marcos Lado Liñares<sup>3</sup>, Felícia Fonseca<sup>1,2</sup>, Zulimar Hernández<sup>1,2</sup> e Tomás de Figueiredo<sup>1,2</sup>

<sup>1</sup> Centro de Investigação de Montanha (CIMO), Instituto Politécnico de Bragança, Campus de Santa Apolónia, 5300-253 Bragança, Portugal

<sup>2</sup> Laboratório Associado para a Sustentabilidade e Tecnologia em Regiões de Montanha (SusTEC), Instituto Politécnico de Bragança, Campus de Santa Apolónia, 5300-253 Bragança, Portugal

<sup>3</sup> Centro Interdisciplinar de Química e Biología (CICA), Universidade da Coruña, Elviña, 15071 A Coruña, Spain  
\*[ana.royer@ipb.pt](mailto:ana.royer@ipb.pt)

### Abstract

Olive groves are predominant in the agriculture of Northeast Portugal. Two-phase olive pomace was composted with sheep manure and almond shell to obtain olive pomace-based composts (OPC). This plant efficacy trial evaluates the effects of composts, application dose and irrigation regime on foliar concentration and nutrient efficiency use by ryegrass. Three OPCs containing different proportions (%) of olive pomace at the initial mixture (OPC 44, OPC 31 and OPC 25) and a commercial organic corrective (HMC) were amended to an Eutric Leptosol at three application doses (10, 20 and 40 t.ha<sup>-1</sup> + control). Experiment was conducted in pots with two irrigation regimes (50-70% and 70-100% of soil field capacity, respectively, corresponding to the two ryegrass growth periods prior to cutting). Plant N levels were assessed through elemental analysis, and P, K, Ca, Mg, Na, Mn, Fe, Zn and Cu levels in the crop dry matter were obtained through Inductively Coupled Plasma Atomic Emission Spectrometry (ICP-AES). The ratio of concentration and dry matter determined nutrient exportations. Overall, the soil amendment significantly increased the foliar macronutrient levels compared to control ryegrass. Both nutrient concentration and exportation on leaves significantly increased with higher water input into the pots, strengthening the relationship between soil water content and nutrient bioavailability. Results were more evident for macronutrients than for micronutrients. Dose factor had a major influence on the nutrient concentration, although it didn't always increase proportionally. Nutrient absorption was more influenced by compost type, with HMC and OPC25 inducing the greatest macronutrient exports. Compost with a higher proportion of olive pomace seems to have a slower release of nutrients to the plant. Recycling olive pomace through composting and its use as soil amendment may contribute to crop nutrition and soil health, towards sustainable agriculture in the region.

**Keywords:** Soil organic amendment, agri-food composts, fodder plant species, pot experiment

**Acknowledgements:** Project BIOMA - Circular Economy and the digital transformation in Agrifood sector, POCI-01-0247-516FEDER-046112. National funds supported this work through FCT/MCTES (PIDDAC):CIMO, UIDB/00690/2020 (DOI: 10.54499/UIDB/00690/2020) and UIDP/00690/2020 (DOI: 10.54499/UIDP/00690/2020); and SusTEC, LA/P/0007/2020 (DOI:10.54499/LA/P/0007/2020). Ana Caroline Royer thanks FCT through the individual grant (2022.11024.BD).