

# RECOVERING ABANDONED MINE AREA UNDER SEMI-ARID CONDITIONS WITH TECHNOSOLS: A PILOT ASSAY IN SÃO DOMINGOS LEGACY SITE

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# OBJECTIVES

- Evaluate the efficiency of **Technosols**, under field conditions, in the environmental rehabilitation of abandoned mining areas (São Domingos mine, S Portugal)
- Explore designed Technosols as cost-effective option to the rehabilitation and closure of mining areas



# MATERIALS & METHODS



**Pilot area: 1.5 ha** with total degradation of the edaphic system and enrichment of bedrock in potentially toxic elements



Superficial application of a **Technosol with alkaline and eutrophic properties (~40 cm)**

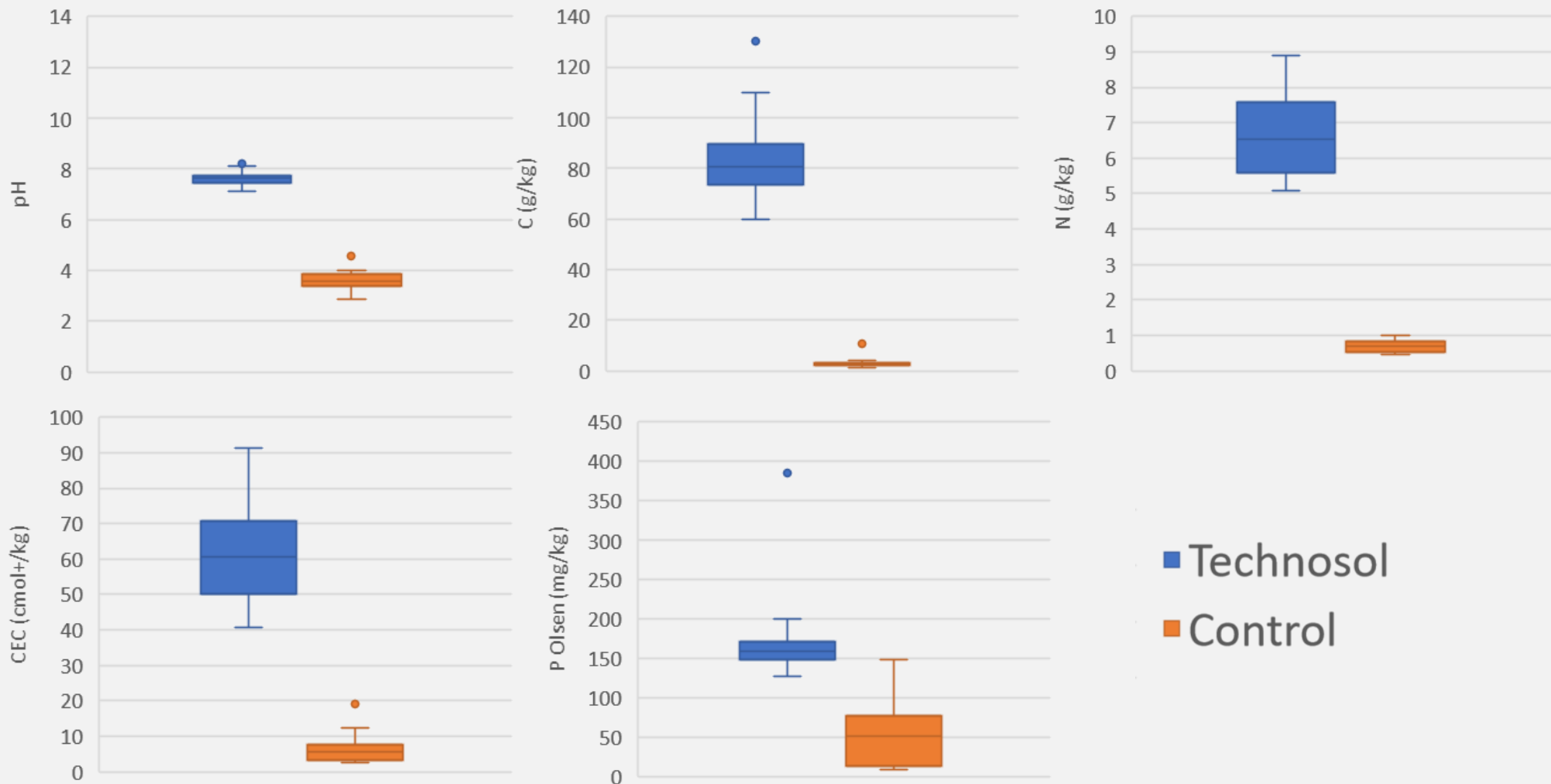
**Control:** similar area without Technosol

## **Evaluation a short-medium term:**

- Plant development (% plant cover and height) after 15 days, 1, 3 and 6 months
- Soil quality after 6 months

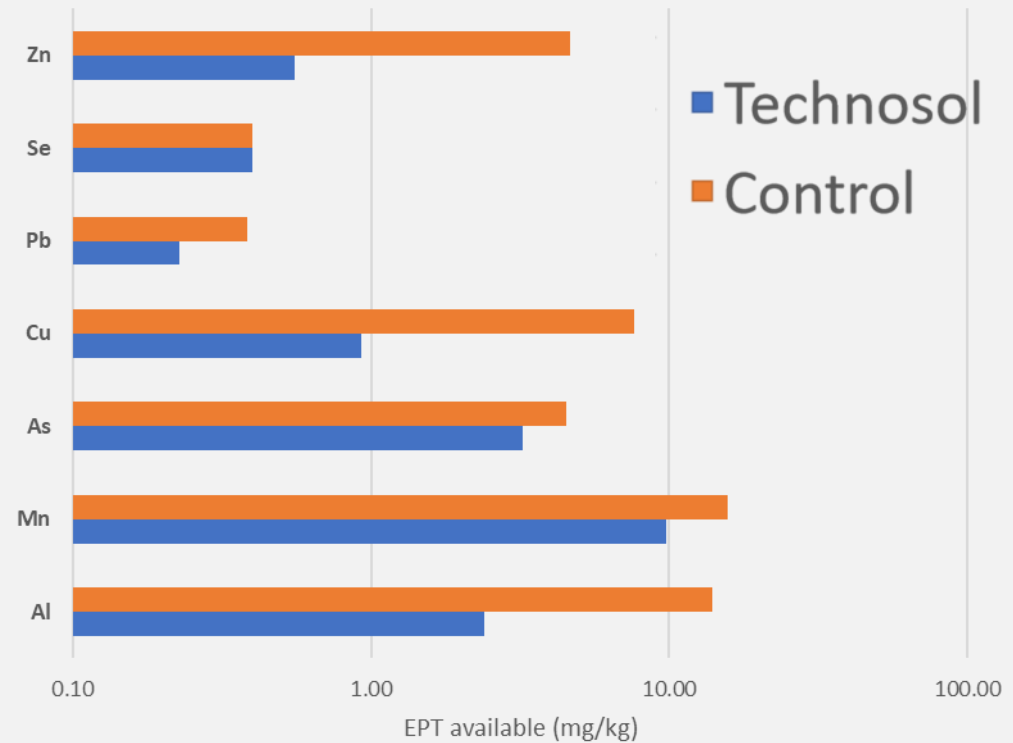
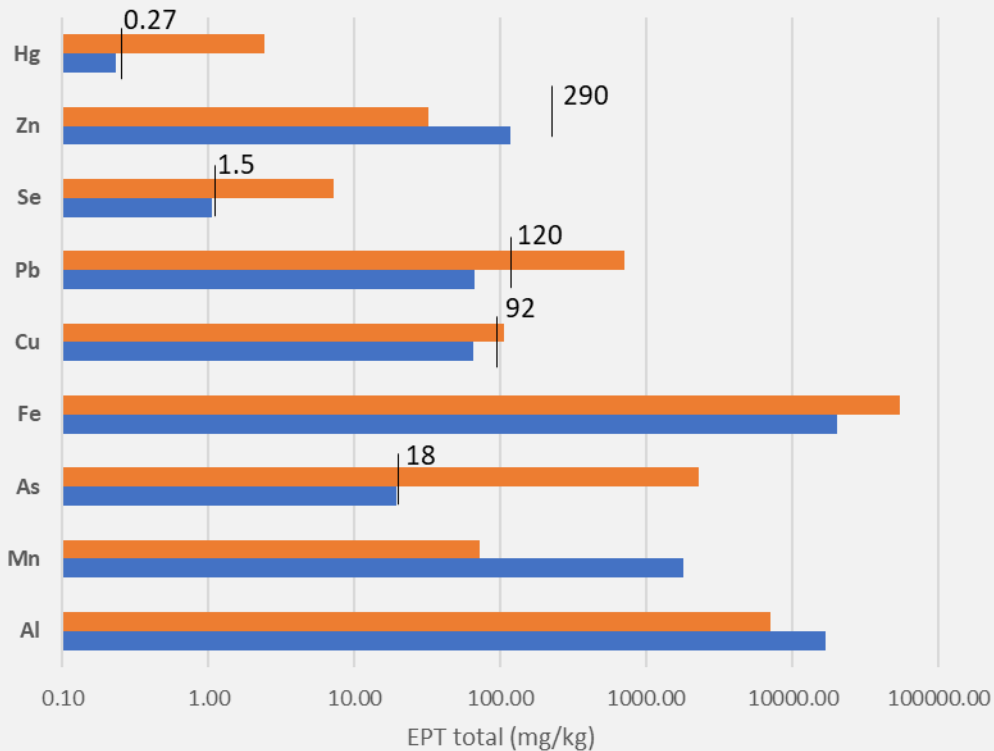
# RESULTS

## Evolution of Soil quality



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High environmental risk of contaminated material and source of elements spreading

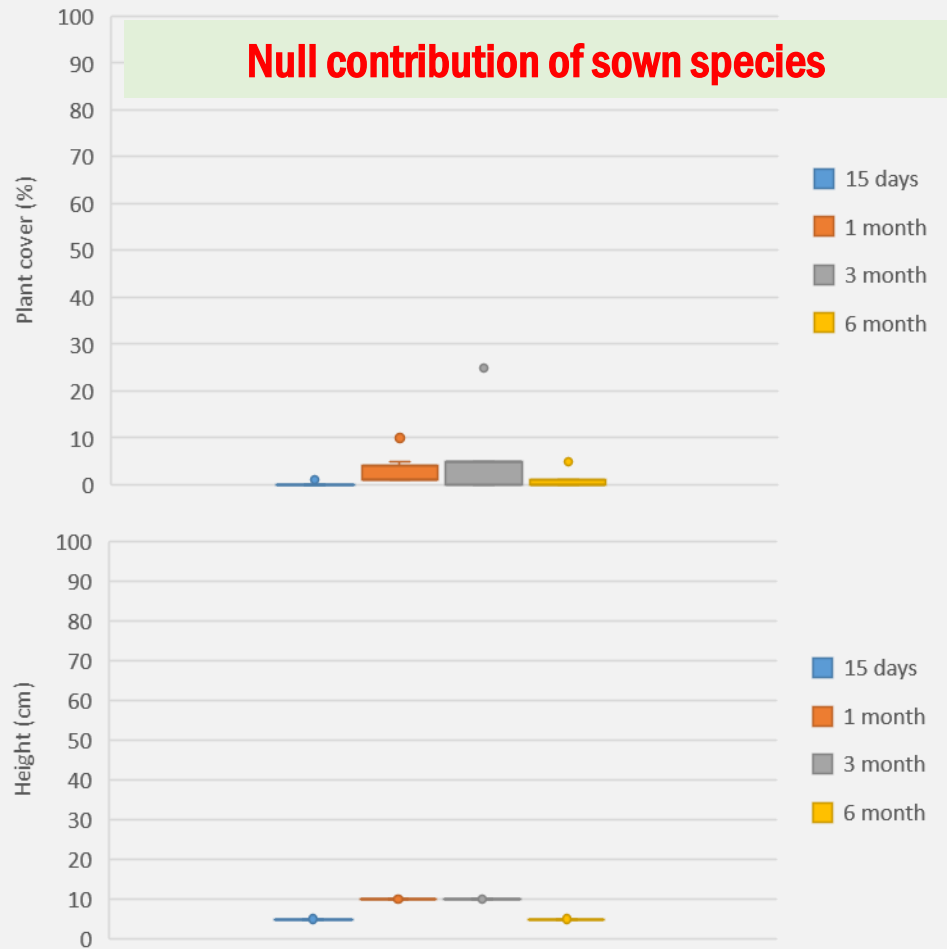
**Technosol** without Potentially Toxic Elements enrichment

# RESULTS

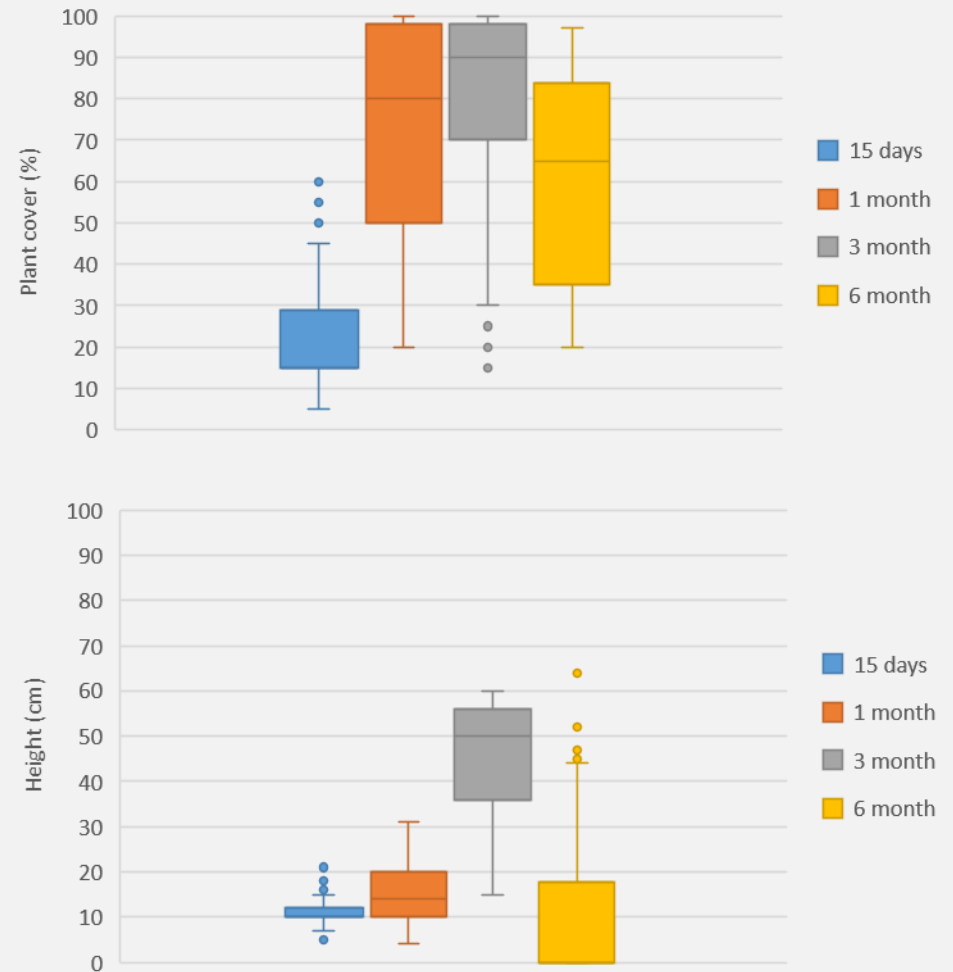
## Evolution of plant system

Control

**Null contribution of sown species**



Technosol



# CONCLUSIONS

- **Technosol** kept the alkaline and eutrophic properties and physicochemical characteristics at short-medium time
- Application of the **Technosol** contributed to:

The **environmental recovery** of very acid materials with multielementar contamination and inexistent edaphic system

Establishment and great development of a **dense plant cover** without nutritional deficiencies and phytotoxicity

**Technosol application is a effective solution to the closure of non-productive areas and its conversion in productive areas**

## Acknowledgment



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Fundo de Coesão