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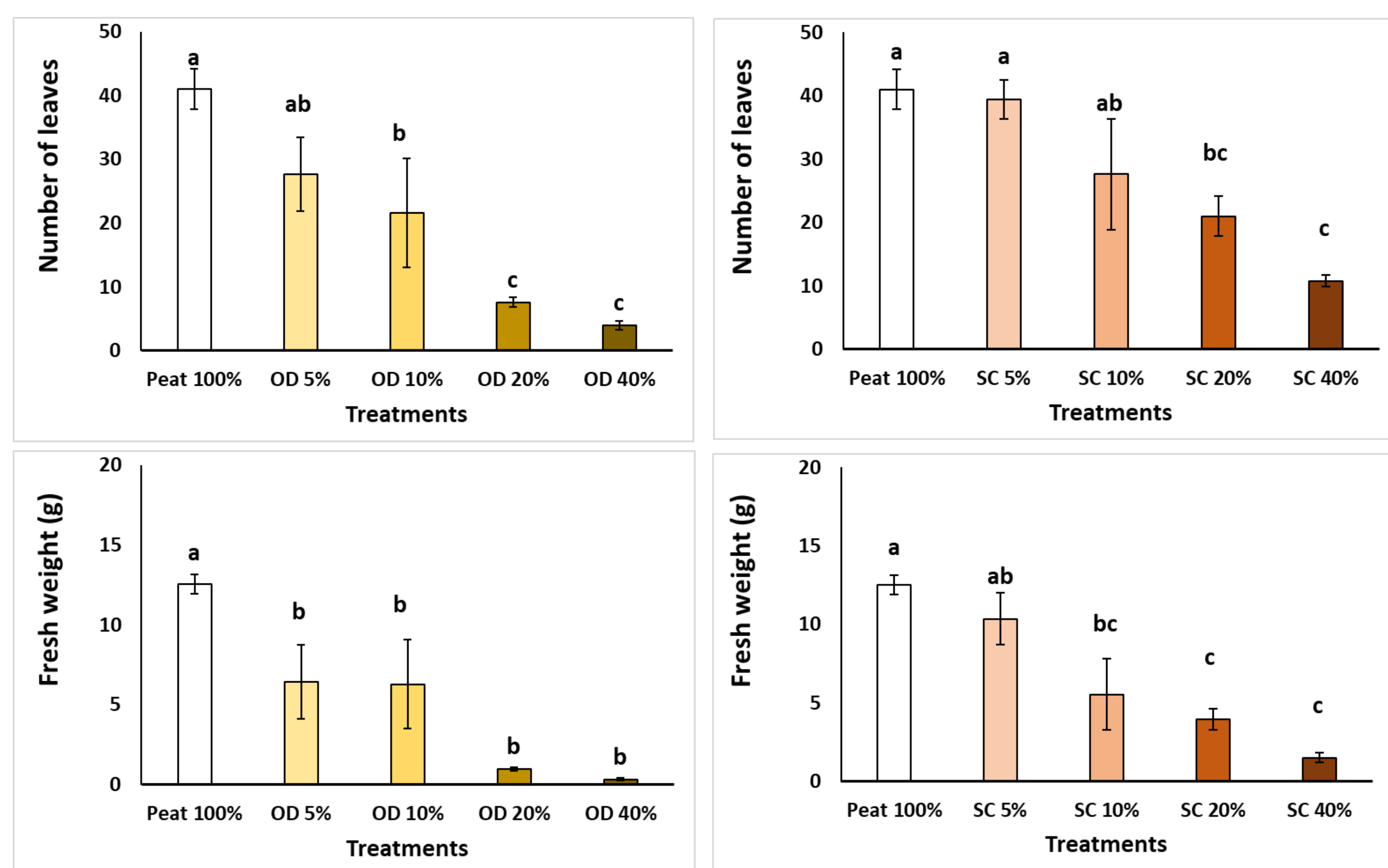
Introduction

Medicinal and Aromatic Plants (MAPs) are not only attracting research interest, but there is an increase in the cultivation areas for the production of fresh, dry biomass and essential oils (EO). The EOs are derived through water or steam distillation and this procedure results in a large amount of wastes, rising environmental concerns about their disposal. This research work was conducted in order to investigate the possibility of using *Origanum dubium* waste (OD) and *Sideritis cypria* waste (SC) derived through the extraction of EO via steam distillation, as an alternative to peat in the soilless production of *Portulaca oleraceae* (purslane).

Experimental set up

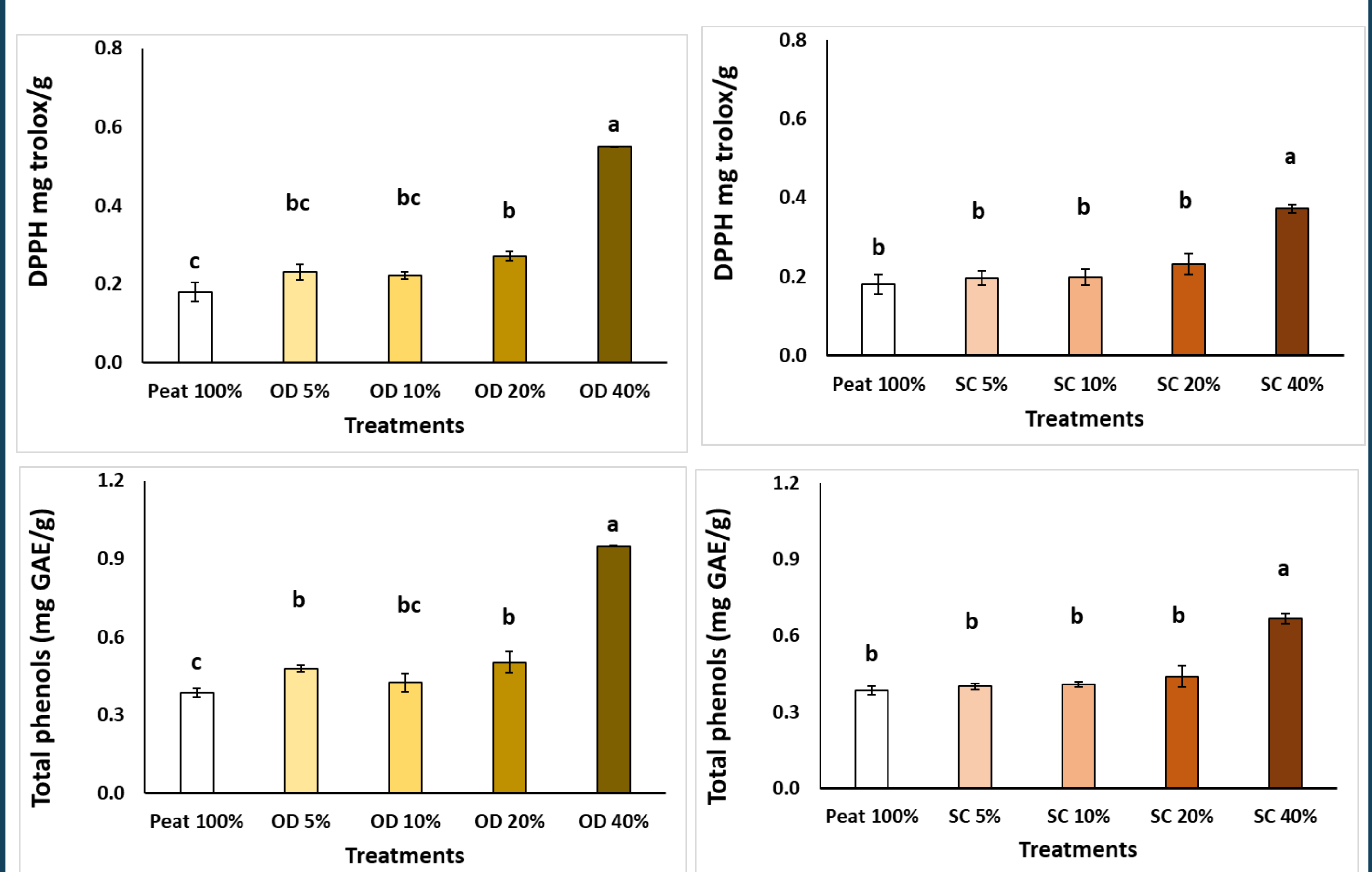
For the evaluation of the tested waste materials (OD and SC) as a cultivation substrate material, 5 different ratios in peat were prepared (0-5-10-20-40% v/v). Plants of purslane were derived from seeds, and when they were at the stage of 4th leaf, they were transplanted into the mixtures. After 21 days of cultivation, during which they were watered according to plants' needs, plants were harvested, and a series of growth, physiology parameters were assessed. Additionally, the physiochemical features of the produced mixtures were evaluated.

Plant growth parameters



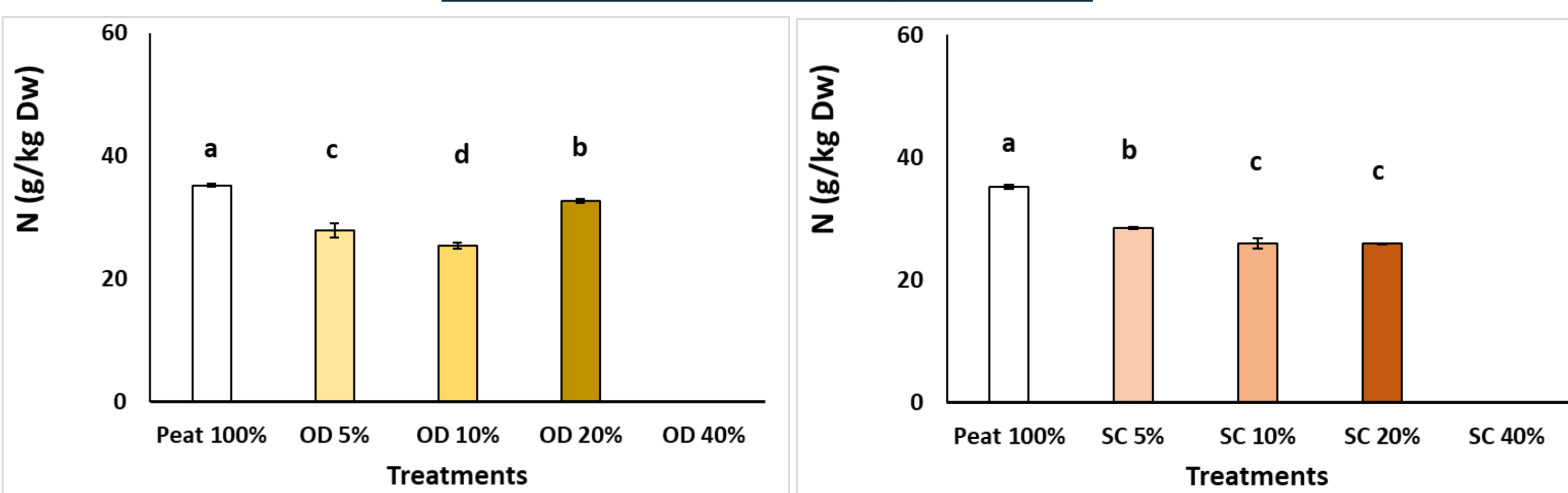
■ The addition of OD ≥ 10% resulted in decreased plant growth (leaf number, fresh biomass), while the 5% OD maintained leaf number and plant height. As for SC, plant height, leaf number and plant biomass were decreased at ≥10% of SC, while the addition of 5% of SC kept growth parameters up to control levels.

Total phenolic content and antioxidant activity of purslane

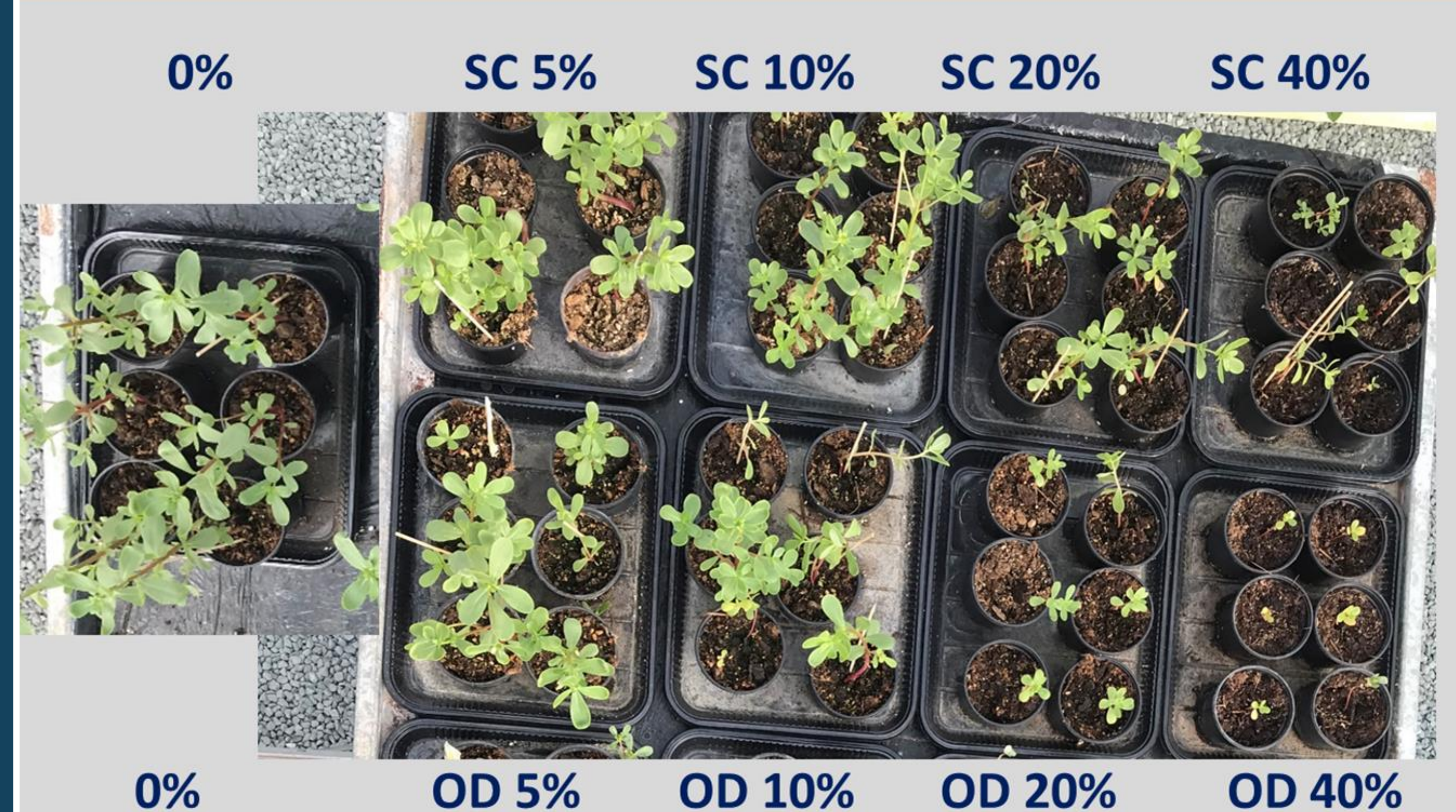


■ The antioxidant activity (DPPH, FRAP) and the total phenolic content appeared increased mainly at the higher OD levels in the mixture, and when SC of 40% was applied.
 ■ Total flavonoids appeared increased in both cases at the mixtures of 40%.

Mineral content in purslane



■ In both cases, mineral accumulation in the plant was affected by the presence of OD and SC. The presence of nitrogen for example was decreased, as the percentage of the tested materials in the mixture was increased.



Conclusion:

Based on results, both materials under evaluation could be successfully used up to 10% in the substrate mixture, and additional research (i.e. fertigation, mix of the materials) could provide useful data towards the exploration of such waste materials. MAP wastes derived from the distillation process, can be explored further for a partially peat substitution, producing plants with added nutritional value and increased antioxidant compounds.