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Spent oyster mushroom substrate in a mix with organic soil for plant pot cultivation

R. I. López Castro[1], S. Delmastro[1] and N. R. Curvetto[1,2]*

[1] Laboratory of Biotechnology of Edible and Medicinal Mushrooms, CERZOS (CONICET), C.C. 738, 8000 Bahía Blanca, Argentina.
[2] Departamento de Agronomía, Universidad Nacional del Sur, 8000 Bahía Blanca, Argentina.

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ABSTRACT

Disposal of spent mushroom substrates can pose a problem to the environment. The re-use in crop production by its recycling as an ingredient of growing mixes would provide an environmentally safe disposition. We show the use of *Pleurotus* sp. spent substrate, obtained after cultivation on a sunflower seed hulls based substrate and mixed with organic soil from local nurseries. *Salvia officinalis* was used to study plant growth in pot cultivation under greenhouse conditions. Treatments were: C, control (soil used in a local nursery); T1, soil : *Pleurotus* spent substrate (2:1 v/v); and T2, equivalent to T1, but using washed *Pleurotus* spent substrate in order to reduce its salt content. T1 substrate had 3.3 times higher electrical conductivity (7 mS cm^{-1}) than that of the control, which is high for the growth of most plants. Air porosity was greater in T1 (7.4%) and T2 (10.2%) than the control (2.8%). The content of certain nutrients also increased with regard to the control, such as phosphorus and sulphur (T1 and T2 substrates), as well as potassium (T1 substrate). After growing 29 days on T1 substrate, plants showed a marked increase in biomass (*ca*. 21%, $p < 0.05$) and some minerals compared to the control. T2 plants grew poorly, possibly because of nitrogen deficit. T1 substrate was adequate to sustain the growth of *S. officinalis* plants in pots, by improving air porosity and mineral content.

Key words: Oyster mushrooms, plant pot cultivation, *Salvia officinalis*, spent mushroom substrate, waste recycling.

* Contact information: Dr. Néstor R. Curvetto, CERZOS, C.C. 738, 8000 Bahía Blanca, Argentina. Tel.: +54 0291 4861666, Fax: +54 0291 4861527. E-mail: micouns@criba.edu.ar