

INTERNATIONAL
HALICH CONGRESS ON
MULTIDISCIPLINARY
SCIENTIFIC RESEARCH
AUGUST 15-16, 2021,
ISTANBUL, TURKEY

PROCEEDINGS
BOOK

EDITED BY
PROF. DR. MUHITTIN
ELIAÇIK

ISBN: 978-625-7464-04-8

**EFFECTS OF INTERMIXED WATER REPELLENT MATERIALS ON
HYDROPHYSICAL CHARACTERISTICS IN POTTING MEDIA**

**Miss. PGUN Wasana
Mr. UI Samarawickrama
Prof. DAL Leelamanie**

Department of Soil Science, Faculty of Agriculture, University of Ruhuna

ABSTRACT

*Potting media act as a facilitator to provide nutrients, physical support, and moisture to plants. With the increasing trend of potted plant industry, problems related to potting media such as water losses, rapid decomposition, and both carbon (C) and nutrient losses have led to increased economic loss. Water repellency is a property of soils related with soil organic matter (OM) and known to influence soil hydrophysical parameters as well as organic matter decomposition. The objective of this study is to assess the effects of intermixed water-repellent materials on hydrophysical characteristics, OM decomposition, and C retention in potting media. . Two potting media (PM1, PM2) were separately intermixed with 0%, 10% and 20% water-repellent material (ground leaf-litter of *Casuarina equestifolia*, CE). Polybag pots were prepared with prepared potting media and *Capsicum annum* (chilies) was planted as the crop. Moisture content (at 4, 10,17 cm depths) and oxygen content (8 cm depth) were measured first at 1, 3 and 7 days, then in weekly intervals for a period of 12 weeks. The C retention as a percentage of the initial C content was measured at the end of growing period. The decomposition rate of OM was measured under controlled condition (30°C, 60RH) and the rates of evaporation was measured under both natural and control environmental conditions. After four weeks, pots with 10% and 20% CE showed higher moisture contents compared with the control. Oxygen content of the media showed no significant difference among six treatments. Higher water loss by evaporation was observed in treatments with CE20%, under both natural and control environment conditions. PM2 with 20% CE showed the highest, while control showed the lowest, C retention. Results revealed that intermixing of water-repellent material increases the C retention, while showing no detrimental impact on oxygen content or water replenishment rate in the potting media.*

Keywords: *Casuarina equisetifolia*, hydrophysical characteristics, C retention, water repellency