Environmental Engineering and Management Journal xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx
http://www.eemj.icpm.tuiasi.ro/; http://www.eemj.eu

"Gheorghe Asachi" Technical University of Iasi, Romania

SURVIVAL, GROWTH AND BIOMASS PRODUCTION OF *PENNISETUM PURPUREUM,* SCHUM IN A CLOSED LANDFILL

Alejandro Cittadino[1,2]*, Miguel Sayevitz[1], María Paula Bonini[1]

[1]CIDEC - Centro de Investigación y Desarrollo de CEAMSE – Coordinación Ecológica Área Metropolitana Sociedad del Estado. Ortega y San Vicente S/N – Villa Domínico. (1874) Avellaneda, Provincia de Buenos Aires, Argentina
[2]Departamento de Ecología, Genética y Evolución. Facultad de Ciencias Exactas y Naturales, Universidad de Buenos Aires Pabellón II, Laboratorio 64, piso 4. Ciudad Universitaria, (1428) Ciudad Autónoma de Buenos Aires, Argentina

Abstract

A phytocapping experience with elephant grass, *P. purpureum*, was carried out in a closed landfill in Buenos Aires province, Argentina, to evaluate survival, growth and biomass production. In spring of 2015 (November), 240 plants were planted in three lines of 80 plants, the distance between plants and lines was 1 m in both cases. The planting was done directly in the topsoil layer of the landfill capping system. The average height of the planted plants was 80.3 ± 24.5 cm. In the next 6 months after planting, elephant grass showed exponential growth with 33.3% of the plants exceeding 260 cm in height. Four harvests were made in winter, the first one, 10 months after planting, August 2016 and the remaining ones in September 2017, August 2018 and August 2019. In each one of them the plants survival and biomass production were evaluated. Survival was 100%, 100%, 87.1% and 82.9%, while the dry biomass production was 9.27, 16.96, 13.24 and 18.15 t / ha for the years 2016, 2017, 2018 and 2019, respectively. The elephant grass adapted to the conditions of the final cover of the sanitary landfill, showed high survival rates, good development of the specimens and a biomass production within the ranges observed in other works on natural soil.

Keywords: : biomass production, closed landfill, *Pennisetum pupureum*, phytocapping

Received: August, 2020; Revised final: November, 2020; Accepted: December, 2020

* Authors to whom all correspondence should be addressed: e-mail: acittadino@ceamse.gov.ar; Phone: +541142277100; Fax: +541142277100