GENERAL INFORMATION

1. Title of Dataset: Growth and distribution of macronutrients and metals in evapotranspirative willow system

2. Author Information

A. Principal Investigator Contact Information
Name: Darja Istenič
Institution: University of Ljubljana, Faculty of Health Sciences
Address: Zdravstvena pot 5, 1000 Ljubljana
Email: darja.istenic@zf.uni-lj.si

B. Associate or Co-investigator Contact Information
Name: Gregor Božič
Institution: Slovenian Forestry Institute
Address: Večna pot 2, 1000 Ljubljana
Email: gregor.bozic@gozdis.si

3. Date of data collection: from 31.3.2016 to 17.1.2020. Specific dates of data collection are given in the data file.

4. Geographic location of data collection: 45°52'32'' N 13°54'20'' E, Ajdovščina, Slovenia

5. Information about funding sources that supported the collection of the data:
The collection of data was supported by projects “Development and efficiency of evapotranspirative zero-emission system for closing wastewater material flows Z2-6751” and “Closing material flows by wastewater treatment with green technologies J2-8162” that were financially supported by the Slovenian Research Agency. Additionally, the financial support was also from the Slovenian Research Agency research core funding No. P3-0388 and P4-0107 and from the Public Forestry Service Program financed by the Ministry for Agriculture, Forestry and Food of the Republic of Slovenia.

SHARING/ACCESS INFORMATION

1. Licenses/restrictions placed on the data: No.

2. Links to publications that cite or use the data: https://www.mdpi.com/1999-4907/12/5/554; https://doi.org/10.3390/f12050554

3. Links to other publicly accessible locations of the data: /

4. Links/relationships to ancillary data sets: No.

5. Was data derived from another source? No.

6. Recommended citation for this dataset: Istenič D., Božič G. 2021. Growth and distribution of macronutrients and metals in evapotranspirative willow system. Ljubljana, Slovenian Forestry Institute and Faculty of Health Sciences, University of Ljubljana. DOI 10.20315/Data.0002

DATA & FILE OVERVIEW

1. File List: The data is gathered in MS Excel file and organised in 6 spreadsheets:

- Wastewater analyses: results of laboratory analyzes of grab water samples are given
- Number of shoots
- Stem height
- Biomass production
- Soil properties
- Elements in biomass

2. Additional related data collected that was not included in the current data package: volume of added water was also monitored. The data are not presented here due to their integration in unpublished paper.

4. Are there multiple versions of the dataset? No

METHODOLOGICAL INFORMATION

1. Description of methods used for collection/generation of data:
The pilot plant where the data were collected is described in Istenič, D., Božič, G., Ariac, C.A., Griessler Bulc, T. 2017. Growth dynamic of three different white willow clones used in a zero-discharge wastewater treatment system in the sub-Mediterranean region – an early evaluation. Desalination and Water Treatment, 19:260-267. doi: 10.5004/dwt.2017.21186
Sampling procedures and laboratory analyses are described in Istenič, D. and Božič, G. 2021. Short-rotation willows as a wastewater treatment plant: biomass production and the fate of macronutrients and metals. Forests, 12(5): 554. https://doi.org/10.3390/f12050554

2. Methods for processing the data:
Data on water quality are organised by parameters and date of sampling. The data were organised by studied willow clones in test and control setting according to dates of measurements or sampling. Biomass production is given according to the surface area taking into account planting density and surface area of test beds. Soil properties at the start of the experiment were analysed in a mixed composite sample while later on separate samples according to studied willow clones were taken. Elemental analyses in woody biomass were done on woodchip samples for each test bed and section of control trees.

3. Instrument- or software-specific information needed to interpret the data: No special software is needed to interpret the data.

4. Environmental/experimental conditions: sub-Mediterranean climate

DATA-SPECIFIC INFORMATION FOR Data.xls

1. Variable List, number of variables and cases/rows:
<list variable name(s), description(s), unit(s)and value labels as appropriate for each>
- Wastewater characteristics: BOD5, COD, TP, PO4-P, TN, NH4-N, NO3-N, NO2-N, T, pH, EC, TSS, settleability, O2 (19–40 rows)
- Number of shoots per willow (45 willows, 29–88 rows)
- Stem height per willow (45 willows, 29–88 rows)
- Biomass production per test bed and control trees section (12 variables, 2 rows)
- Soil properties: pH, P2O5, K2O, organic matter, organic carbon, total nitrogen, C/N ratio, Ca, Mg, K, Na, exchangeable acidity, sum of base cations, CEC, base saturation, Fe, Cd, Cu, Ni, Pb, Zn, Cr, Hg, Co, Mo, As, Mn (7 cacses)

- Elements in biomass: N, C, P, K, Ca, Mg, S, Fe, Al, Na, Mo, Cu, Pb, Zn, Ni, Co, Mn, As, U, Th, Sr, Cd, Sb, Bi, V, La, Cr, Ba, Ti, B, W, Sc, Tl, Se, Te, Ga, Ag, Au, Hg in woody biomass for each test bed and control trees section (15 cases)

4. Abbreviations:

'V 093' – willow clone *S. alba* L. x *S. alba* var. *vitellina* (L.) Stokes x *S. alba* L.
'V 052' – willow clone *S. alba* L. var. *calva* G.F.W. Mey x *S. alba* L.)
'V 160' – willow clone *S. alba* L.