

Production and Supply of Solid Fuels and Intermediates

Short introductory summary:

Switchgrass (*Panicum virgatum* L.), as an energy crop, is defined by low investment in agricultural technology, high resistance to disease and pests, as well as potentially high yields. Switchgrass biomass can be converted into different forms of energy or biofuels, and one of the ways of conversion is energy production through thermochemical conversion processes. The aim of this study was to determine the energetic properties (calorific values, proximate and ultimate analysis) of switchgrass biomass in relation to four different wood ash application rate (control; 1,5 t ash/ha; 3 t ash/ha; 4,5 t ash/ha). The experimental field has been established at the end of April 2016, by split-plot design in three repetitions. Biomass harvest of switchgrass (*Panicum virgatum* L) will be conducted at spring season 2021, when the expected moisture content will be suitable for direct combustion process. Analyses of harvested biomass will be conducted at University of Zagreb Faculty of Agriculture in Laboratory for biomass and energy efficiency in agriculture.

Presenter: **Ana MATIN, University of Zagreb Faculty of Agriculture, Agricultural Technology, Storing and Transport Dpt., Zagreb, CROATIA**

Presenter's biography:

Ana Matin, Ph.D. is Assistant Professor at the University of Zagreb Faculty of Agriculture. She obtained her Ph.D. at the same Faculty in 2012. Matin works at the Faculty of Agriculture since 2004, and during that period was project manager.

Biographies and Short introductory summaries are supplied directly by presenters and are published here unedited

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Subtopic: 2.1 Production and Supply of Solid Fuels and Intermediates

Topic: 2. BIOMASS CONVERSION FOR BIOENERGY

Arundo Donax L. as Solid Biofuel - Biomass and Biochar Valorization

Short introductory summary:

The aim of this paper is to investigate the energy properties of the Arundo Donax L. energy crop and the possibility of its conversion to solid fuel (biochar) by pyrolysis. Investigations included structural, ultimate and proximate analysis, and the content of macro elements, as well as the share of biochar after the pyrolysis process, its energy properties, and the content of micro and macro elements. Based on the research conducted on direct combustion and pyrolysis of Arundo donax L. biomass, it can be concluded that this energy crop has great potential as raw materials for direct combustion. In addition, this culture is also characterized by significant potential in the process of pyrolysis, ie the production of bio-oil as an energy source and biochar as an added value product. Comparing the results obtained with biomass composition and biochar composition as a pyrolysis product, Arundo donax L. biomass is a quality raw material for the production of solid biofuels.

Presenter: **Mateja GRUBOR, University of Zagreb Faculty of Agriculture, Zagreb, CROATIA**

Presenter's biography:

Title of qualification awarded:

Master of Science in Engineering of Agricultural engineering

Work experience:

1. Date (from – until): 2015 - now

Institution: University of Zagreb Faculty of Agriculture

Position: Expert associate

Workfield: Drying, Storage, Biomass, Biofuels

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