

Impact of Nutrition Effect to Productivity of Bioenergy Crop *Miscanthus x giganteus* in Different Environments

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Introduction

Miscanthus x giganteus Greef et Deu is a perennial C4 grass, originally from East Asia. It has high production potential and is ecologically very acceptable species suitable for the production of solid biofuels (Živanović et al, 2014; Đurić et al., 2019). Generates high biomass yield, in the period to 20 years, has good energy performance and relatively low investment in production.

Material and Methods

The subject of the research is a miscanthus, a clone imported from Germany for introduction to energy crops production. The aim of this research was the study of the influence of the environment and nutrition on the morphological and production properties of miscanthus in the Surduk, in chernozem type soil. The crop is at the beginning of the research was seven years old, and was in years to achieve maximum yield for commercial production. In period 2018-2019 were tested two variants – control, V1, and variant with nitrogen top dressing, V2. Morphological productive characteristics of miscanthus were analyzed in this study: plant height in the tasseling period, number of leaves on stalk in the tasseling period, number of stalk in tiller, number of stalk with tassel, dry plant yields, stalk moisture in harvest time and cellulose content.

Results and Discussion

The miscanthus achieves high yields and excellent performance in summer drought conditions because it has a well-developed root system. In the period April-October 2018-2019 there was less precipitation (428 mm and 431 mm) than the optimal needs of the plants (550 mm). In the two-year average the miscanthus had a stem height of 342.4 cm and achieved a yield of 31.4 t ha⁻¹. To these morphologically productive traits significantly affected weather conditions, nitrogen nutrients as well as the interaction of the factors studied. *Miscanthus* (or Elephant Grass) is a popular choice for biofuel production, because it produces a crop every year without the need for replanting and due to the rapid growth, low mineral content, and high biomass yield, outperforming maize and other alternatives.

Conclusion

Miscanthus (or Elephant Grass) is an excellent choice for our environment, our economy, and our future security of energy supply.

It also complements forestry as it sits easily alongside to help even out supply chain needs.

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