

MISCANTHUS GIGANTHEUS AND AGRI-RESIDUES AS SUSTAINABLE ENERGY RESOURCES FOR HOUSEHOLD AND SMALL FARMS HEATING SYSTEMS

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Abstract. The use of energy crops and agricultural residues for heating systems to provide renewable energy for rural communities has opened new perspectives about available solid biomass conversion in thermal energy. Considering alternative options to demonstrate sustainability of biomass supply chain (logistics for available quantities, processing technology and equipments, customers' needs), the most important role for promoting the development and fair competitiveness of targeted renewable resource as *Miscanthus giganteus* is to design pilot-projects that include pressed products (pellets, briquettes) and adapted technology to create optimal conversion of biomass in the local heating systems. *Miscanthus giganteus* is a C4 perennial grass with large potential for intensive use of marginal lands, especially taking in consideration the fuel versus food competition. Moreover some indigenous resources (cereal straw, wood biomass - orchard trees pruning, saw dust, wood chips) or other agricultural residues (vegetable residues and low quality products) may ensure the local requirements for heating by promoting low-carbon technologies and to achieve European and national target for renewable energy by 2020.

Key words: *Miscanthus giganteus*, heating systems, agri-residues, pilot-project, sustainability.

Introduction

The bio-economy concept relates to global orientation of the economy towards sustainable development of society integrating new and old technologies for balanced progress of humanity within nature's limits. Tony Juniper reminds us what always science demonstrates, the biomass capacity to absorb solar energy by photosynthesis, this renewable source should have more applications rather than using fossil fuels as energy sources.

Romania has developed national strategies regarding renewable energy and recently, various energy crops was included as alternative option for fossil fuel and offers special approach in order to sustain its market growth in Eastern