

Abstract

The influence of Miscanthus based media on the growth and development of selected perennials and ornamental shrubs

Increasing demand on horticultural substrates is affected by demographic, ecological and economic factors. Increasing population and thus, increasing demand on the market on food and ornamental crops. Increasing human population affects increased demand on food and ornamental crops. Availability of many substrate components is decreasing due to increased environmental consciousness related to their sourcing. Energy crops, characterized by fast biomass production with relatively low agricultural input, fit into definition of sustainable development. Particularly noteworthy among energy crops is giant miscanthus (*Miscanthus × giganteus* Greef et Deu), with its production area increasing lately in the U.S., Canada, as well in Europe. Two factorial experiment was conducted in years 2014-2016 on six selected species of perennials and ornamental shrubs: black-eyed Susan *Rudbeckia fulgida* 'Goldsturm', rice buton aster *Aster dumosus* 'Jenny', stonecrop *Sedum spectabile* 'Stardust', thuja *Thuja* 'Smaragd', white spiraea *Spiraea densiflora* Nutt. ex Torr. et A. Gray and smooth hydrangea *Hydrangea arborescens* 'Annabelle'. In the experiment 5 substrate mixes based on peat (P) and Miscanthus straw (M) were tested in ratios: 100%P, 70%P:30%M, 50%P:50%M, 30%P:70%M, 100%M. Each substrate was subject to three fertilization practices with two different types of fertilizers (slow-release and easy available) and their combination Basacote, Basacote+YaraMila, and YaraMila. Substrates containing 100%M had higher pH and lower EC, nitrogen and nitrates in comparison to substrates based on 100%P. Growth of tested plants varied between species, however, clear trend was observed: with the increase of miscanthus straw amendment in the substrate, values of tested biometric features of plants were decreasing, and Thuja was the only exception from this trend. Plants had reached market values in substrates with up to 30% of miscanthus straw amendment for Hydrangea, Aster and Spiraea, up to 50% miscanthus amendment for Sedum and Rudbeckia and in all tested substrates for Thuja. These results implicate suitability of miscanthus straw based media for cultivation of ornamental plants.