1. Abstract Title

Abiotic stress tolerance in perennial grasses – recommended for the management of dry and degradated areas

2. All Authors

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4. Short Description of what will be discussed during the presentation

Permanent grassland are a source of healthy forage for a large group of ruminant animals. They also serve to conserve biodiversity, reduce environmental pollution, including nitrogen oxide and sulfur in the air. They can contribute to the agro ecosystem sustainability by reducing soil erosion and conserving soil water. Ecotypes may provide genetic resources to improve resistance / tolerance for water stress limit or different soil type. Water conservation is the responsibility of every citizen, not just in areas with drought or low moisture conditions. Drought resistance is being increasingly labelled as being a 'complex trait'. We also need to take into consideration soil conditions, lighting, use and maintenance issues, and even the visual appearance. There are two different opinions regarding the impact of agricultural intensification on biodiversity. Some authors suggest that is that caused the extinction of many ecotypes and replacing them with new forms of crops. According to other authors the negative impact on the biodiversity is not observed, because the genetic resources *in situ* and *ex situ* form are included into the breeding programs and the wide variation within the newly created varieties could be maintained. Preliminary tests could be conducted under control conditions, however finally obtained results should be confirmed under field conditions.

In the resent study as a plant material ecotypes and commercial hybrid which belong to 7 cool-season grass species were used: tall fescue (*Festuca arundinacea*), meadow fescue (*Festuca pratensis* Huds.), red fescue (*Festuca rubra* L.), perennial ryegrass (*Lolium perenne* L.), Timothy-grass (*Phleum pratense*), Kentucky bluegrass (*Poa pratensis*) and Deschampsia cespitosa. Ecotypes were collected from semi-natural area representing different part of Poland. Next, based on the preliminary description, 15 – 17 genotypes which represent each species, were included into recent study. For the greenhouse test seedlings were taken from the experiment conducted under field conditions and after vegetative propagation they were planted into pots. Tolerance to different soil type: tree treatments – (1) soil with low phosphorus, magnesium n-organic, C-organic content, (2) soil with high clay content and low phosphorus and magnesium content, (3) control (mixture: 3 peat : 1 sand).). Plants were cut every 7 days at a height 7 cm (red fescue - 4 cm), and regrowth measured. Tolerance to water deficit test: plants grow for six weeks at an optimum moisture content of the soil (35 – 42%; soil type - mixture: 3 peat : 1 sand), cut every 7 days at a height 7 cm (red fescue - 4 cm), and regrowth measured. After this time resistance for water deficit and different type of soil was evaluated.

Different type of soil test is conducted in three treatments: control (mixture: 3 peat : 1 sand) and two types of soil taken from devastated area. Based on the results obtained in the water deficit test it was possible to conclude, that differences for red fescue, tall fescue and Deschamsia caespitosa regrowth under drought stress and under control conditions were not significant.

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5. Biography of presenting author

Elzbieta Czembor is a plant pathologist with a MS degree in Plant Breeding Department, Agriculture University, SGGW-AR, Poland and Ph.D. degree in Plant Breeding and Acclimatization Institute (PBAI-NRI Radzikow), Poland. She participated in Postgraduate Study on Plant Pathology in Plant Pathology Department, Montana State University, Bozeman, USA. Her research is focused on fungal diseases of maize and grasses involving screening of landraces and wild forms for resistance. She specialized in genetics and breeding of fodder crops and maize. Lately she has become interested and involved in research on: mechanisms of plant resistance to fungal pathogens, evaluation of genetic resources, food quality and safety, breeding for organic farming, environmental protection, ecology and bioethics. She was presenting a number of lectures and posters on more than 50 international conferences and seminars. She published more than 50 scientific papers and she is involved in several national and international projects. Elzbieta is an active science communicator as a member of Polish Plant Pathology and Polish Genetics Societies.

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