

COMPARISON OF GERMINATION OF SELECTED ENERGY GRASSES SPECIES WITHIN DIFFERENT WATER REGIMES

Jaroslav BERNAS¹, Marek KOPECKÝ¹, Jan MOUDRÝ jr.¹, Jan MOUDRÝ¹,
Zuzana JELÍNKOVÁ¹, Petr KONVALINA¹

e-mail: bernasj@seznam.cz

Abstract

Grasslands in the landscape fulfil not only a number of important functions but they are also relevant in terms of production. One of the ways how to utilize biomass effectively is its use in power engineering. Currently, several technologies which are able to obtain energy from phytomass are known. Anaerobic digestion and direct combustion belong among the most common ones. Due to the phytoenergetic development, there are monocultural grasslands established. Grasslands appear to be the most appropriate for these proposes. Selection of species and varieties depends on many factors. The energy obtaining technology is the most important. Also the growing method and harvesting dates are dependent on it. With an assumed climate change, also the grass drought resistance is becoming more important. This property is important not only in the vegetation period but especially during seed germination and seedling emergence. In this article, based on the results of laboratory experiments, the germination of seeds of selected grass species within two water regime types is assessed and compared. Experiments were carried out in a laboratory at a constant room temperature (21 °C) without the influence of direct sunlight and 16 repetitions were taken. The monitored species were orchard grass (*Dactylis glomerata* L.) - Padania species, reed canary-grass (*Phalaris arundinacea* L.) - Chrastava species and Szarvasi (*Agropyron elongatum* L.). One of the water regime variants was the simulation of water stress during germination. This way, the seed drought resistance was verified and compared. The highest germination under conditions of water stress was achieved with *Agropyron elongatum* L. seed. The germination of this seed always reached values of $\geq 70\%$ in all 16 repetitions. The difference in germination between different seed kinds within the variant simulating water stress ranged from $\geq 22\%$ to $\leq 80\%$ in all 16 repetitions. Germination of seeds in the second permanently irrigated variant does not drop below 78% with *Agropyron elongatum* L., 68% with *Dactylis glomerata* L. and 30% with *Phalaris arundinacea* L.

Key words: drought resistant, water stress, germination, energy grasses