PP-278

The Establishment of Fast-Growing Trees into *in vitro* Collection

Nataliia KUTSOKON[1], Lidiya KHUDOLIEIEVA[2], Jana LIBANTOVA[3], Namik RASHYDOV[1]
[1] Institute of Cell Biology and Genetic Engineering NASU, Ukraine
[2] National Technical University of Ukraine "Igor Sikorsky Polytechnic Institute", Ukraine
[3] Plant Science and Biodiversity Center SAS, Slovak Republic
kutsokon@gmail.com

Aim of the study: Biomass as renewable energy has a great potential for European countries. For creating of bioenergy plantations in Ukraine poplar and willow trees could be effectively used, as they are able to produce a significant amount of biomass within a short period. The aim of current study was to introduce perspective for energy plantations fast-growing trees in *in vitro* collection. Further these clones can be used to evaluate stress tolerance as well as for gene engineering experiments.

Material and Methods: Introduction of fast-growing poplar clones "Ivanteyivska" (*Populus suaveolens Ficsh x P. berolinensis Dippel*.), "Slava Ukrayiny" (hybrid from free pollination of *P. nigra*), "Novoberlinska-7" (*P. pyramidalis x P. laurifolia*) and willows "Pryberezhna" (unknown origin) and "Olimpiisky vohon"(*Salix alba x S. fragilis*) to the *in vitro* collection was carried out at the beginning of the growing season (February-March). Washing with soap solution followed by plant sterilization with sodium hypochlorite solution (pure common detergent "Bilyzna" diluted with distilled water (1:3) for 10 minutes and then with 70% ethanol for 1 minute were applied. After each stage of processing, plant material with sterile distilled water was washed. Petiole and leaf explants were planted on a callus induction medium (MS, modified by growth regulators 1.02 mg/l 2-ip and 1.86 mg/l NAA). The introduction medium (MS, modified by growth regulators 0.4 mg/l BAP and 0.1 mg/l NAA) for planting shoots with active buds was used.

Results demonstrated high survival efficiency of shoot explants on introduction medium (95%), while the method of direct regeneration from leaves and stems on callus induction medium was not sufficiently effective. Washing of the plant material with warm soap water is important step of sterilization process, what allows to pre-clean material from fungi and reduce the time of sterilization by aggressive sterilizing agents. Excluding of the washing stage by soap solution led to a strong affection of material by spores of fungi, while increasing of exposition time by NaClO up to 10 min, and by C_2H_5OH up to 5 min led to a total loss of explants. The effectiveness of the sterilization method used in the study was about 50%.

Acknowledgements: The work was carried out with the support of program for scientific research of National Academy of Science of Ukraine "The biological resources and the modern technology of bioenergy conversion"(2013-2017) and EU FP7 Marie Curie Actions "International Research Staff Exchange Scheme" (FP7-PEOPLE-2013-IRSES # 612587). Authors also thank to Dr. Los S.A. from Ukrainian Institute of Forestry and Forest melioration for providing initial plant material.

Keywords: Fast-growing trees, biomass, *Populus sp*., *Salix sp*., *in vitro* propagation.