

**Pidlisnyuk V.<sup>1</sup>, Stefanovska T.<sup>2</sup>, Erickson L.<sup>3</sup>, Shapoval P.<sup>4</sup>, Trogl J.<sup>1</sup>, Yaschuk S.<sup>2</sup>**  
**DEVELOPING AN INEXPENSIVE PROCESS TO PRODUCE BIOMASS**  
**AND TO RESTORE SOIL AT THE SITES CONTAMINATED BY THE PAST**  
**MILITARY ACTIVITIES IN UKRAINE**

<sup>1</sup>Jan Evangelista Purkyně University, Kralova Vysina 7, Usti nad Labem, 400 96, Czech Republic

<sup>2</sup>National University of Life and the Environment, Gerojiv Oboronu 13, Kyiv, 03040, Ukraine

<sup>3</sup>Kansas State University, 1005 Durland Hall, Manhattan, Kansas, KS 66506, USA

<sup>4</sup>National University Lvivska Politechnika, Sv.Yura Square 9, Lviv; 79013, Ukraine

The former military sites are widely spread in the countries of Eastern and Central Europe. That localities, being polluted by heavy metals, oil and degraded organic products constantly pose health risks and negatively affect soil, water resources and biodiversity. One of the perspective approach for revitalization of that land is union of phytotechnology with energy crops with simultaneous production of biomass. The proposed approach permits to restore marginal land to agricultural use or urban land bank and simultaneously meet the demand for production of biomass as alternative energy source. Second generation biofuel crops are becoming favored because they are not in competition with main agricultural food crop production. The sterile, perennial grass *Miscanthus x giganteus* is considered one of the most promising for that goal. The crop has a C-4 photosynthetic pathway, and has been demonstrated to achieve high conversion efficiency for C-4 plants. It has a good environmental profile with the potential to increase soil carbon, soil fertility and biodiversity and to reduce nutrient run-off and leaching, and exhibited good production properties while used for remediation of brown-field sites, former mining sites and contaminated agricultural lands.

The investigation was initiated on using *M. x giganteus* for restoration of former military sites: former military storages (Dolyna, Ukraine and Kamenetz-Podilsky, Ukraine), and recently appeared sites during military operation in the East of Ukraine (Kurakhovo). The main contaminants at the research sites are spilled jet fuel (kerosene) and different metals. Locations are classified as contaminated and damaged ones by the local environmental authorities and requested revitalization. Semi-field greenhouse pot experiment was done with the soils taken from the above mentioned sites. It was established that *M.xgiganteus* has been successfully cultivated at research soils during vegetation seasons (three seasons for soil from Kamenetz-Podilsky; two seasons for soil from Kurakhovo, one season for soil from Dolyna) and in all cases biomass obtained was only slightly contaminated by metals and residues of organic substances and may be used for further processing. Two field plots were established at the abandoned military locations in Dolyna and Kurakhovo, Ukraine and influence of agronomic factors to the biomass production has been explored. It has been instituted that plant while growing at the field plots at Kurakhovo, Eastern Ukraine showed a good production of miscanthus biomass when plant's rhizomes were treated by Plant Growth Regulator Stimp. The results prove applicability of *M. x giganteus* for simultaneous phytostabilization of the land and production of energy biomass

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