

AUTOMATED REMOTE EXPRESS EVALUATION OF THE DISTRIBUTION OF *PHRAGMITES AUSTRALIS* REED BEDS PROSPECTIVE FOR FUEL BIOMASS HARVESTING

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SUMMARY

We studied vegetation on the model site of drained and rewetted areas the cutover peatland «Dokudovskoe» (Lida district of the Grodno region of Belarus), to develop a methodology for automated express assessment of the spatial arrangement of plant communities prospective for harvesting of fuel biomass, on the basis of broadband satellite images in the visible and beginning of NIR region spectral bands with medium spatial resolution. It was found that the vegetation of model site is composed of eight phytocenotic types, where the most promising for the biomass harvesting are reed and reed-sedge plant communities.

We included all plant communities of model site with three classes on the basis of the productivity and availability for industrial harvesting of biomass: promising, unpromising and woody. In developing the methodology we analyzed 10 spectroradiometer ASTER VNIR bands and their combinations (band 1, band 2, band 3N, band 1/band 2, band 1/band 3N, band 3N/band 2, NDVI, NDWI, NDGI and band 2/NDVI) and the best results were obtained with the ratio band 2/NDVI. It shows the least overlap of value ranges for the considered thematic classes, and by the results of van der Waerden test has the smallest p-value 6.684×10^{-4} for the image acquired on 16.08.2015 and 3.254×10^{-4} – acquired on 19.07.2014. The difference in estimate of the areas of suitable for biomass harvesting plant communities at the model site by satellite images acquired at different years was 5%.

The total amount of the biomass suitable harvesting at the model site for the winter of 2015–2016 was estimated at 4262 tons of dry matter.

Key words: paludiculture, peatland vegetation, phytomass, fuel biomass, satellite remote sensing, thematic mapping, *Phragmites australis*, wetlands renaturalisation.