



Use of *Hissopus officinalis* L. Culture for Phytoamelioration of Carbonate Outcrops of Anthropogenic Origin the South of European Russia

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Abstract: Eurasian-African species of the *Lamiaceae* family – *Hissopus officinalis* (L.) gradually enters the culture of the South of European Russia. This semi-shrub has high resistance to carbonate soils, overground productivity, and longevity. Field experiments were conducted including the study of *H. officinalis* value to phytomeliorate cretaceous exposures in comparison with standard *Agropyron cristatum* Gaertn. crops and natural succession on the chalk outcrop of anthropogenic origin in the Belgorod region in 2008-2016. During nine years the *H. officinalis* crops were significantly higher than those of *A. Cristatum* Gaertn. and options with natural succession for the accumulation of overground and underground phytomass. It has been established that over an average nine-year period the *H. officinalis* crops generated $370.5 \text{ g} \cdot (\text{m}^2)^{-1}$ of absolutely dry substance of aboveground organic mass per year in comparison with the *A. cristatum* ($213.6 \text{ g} \cdot (\text{m}^2)^{-1}$ per year) crops and natural substrate overgrowth ($59.7 \text{ g} \cdot (\text{m}^2)^{-1}$ per year). On a chalk outcrop, the total carbon tends to increase by 1.971% in absolute terms as compared to the initial state for nine years of life in fine-grained soil under the *H. officinalis* crops. The content of humic acids increases by 1.109% in absolute terms, including an increase in the content of fulvic acids by 0.793%. It is concluded that the *H. officinalis* crops have greater environmental and technological value for phytomelioration of cretaceous exposures as compared with standard grass stands and natural vegetation communities.

Keywords: *Agropyron cristatum*, Carbonate exposures, Phyto melioration, *Hissopus officinalis*, Soil-forming process
