Original article

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Optimization of the Pine Plantations Biological Stability under Radioactive Contamination Using Index of Fluctuating Asymmetry of Needles

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Abstract. *The article is devoted a method for assessing the biological stability of pine plantations using the fluctuating asymmetry index (IFA) with automatic processing of scanned images of needles. This method makes it possible to eliminate errors associated with the influence of the human factor in order to obtain up-to-date data on the assessment of disturbances in the development of woody plants for the purpose of early diagnosis of a decrease in the biological stability of forest ecosystems. Aspects of the bioindicative assessment of disturbances in the stability of plant development based on morphometric traits using the index of fluctuating asymmetry and criticism of this method are considered. The results of a bioindicative evaluation of disturbances in the developmental stability of Scots pine under conditions of radioactive contamination are presented, taking into account the shortcomings of the method. To eliminate system errors associated with the influence of the human factor, digital images of pine needles were processed in a semi-automatic mode. At the end of the article, recommendations are given for carrying out special measures that increase the biological stability of plantations in order to return the surveyed areas to economic circulation.*

Key words: *fluctuating asymmetry index, Pinus sylvestris L., radioactive contamination of forests, forest stands stability.*

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