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CLIMATIC EVENTS IN THE LAST DECADES (1971-2003) AND DIAMETER GROWTH OF AUSTRIAN PINE

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The woody plants introduced to our climatic conditions are gradually getting acclimated. Only after a lot of years since the introduction we can conclude about whether the new environment is or is not suitable for the appropriate growth of the introduced species. The aim of the study was to identify and monitor the damage to the Austrian pine /Pinus nigra ARNOLD/ trees in Horné Lefantovce by the phyto-pathogenic fungus *Sphaeropsis sapinea* on the background of influence of primary factors – climate characteristics (mean temperature in a month, monthly precipitation total, sun hours, air pressure, water vapour pressure) over the period 1971-2003. We performed an annual ring analysis on 15 increment cores sampled from the studied Austrian pine /Pinus nigra ARNOLD/ trees in Horné Lefantovce in November 2003, and subsequently used them for examination of influence of other climate characteristics (number of sunny hours, mean air humidity, water vapour pressure) from July of the preceding year to August of the current year over the period 1971-2003. Ours two dendroclimatic models belong to the category of empirical models that are based on statistical evaluation of empirically derived relations between the time series of annual rings parameters and the time series of monthly climate characteristics. The background for the statistical evaluation is the linear regression model (Fritts, 1976, Cook and Kairiukštis 1990). The first model covers years 1971– 2003 (last decades of running climate changes) and again explores the influence of monthly precipitation total and

mean temperature in a month, from July of the preceding year to August of the current year, but in coupling with other climate characteristics (mean air humidity, water vapour pressure, number of sun hours in a month) separately for the cold (October-March) and warm half of year (April-September). The second model also uses regression analysis for examination of the selected group of climate characteristics on Austrian pine growth: mean monthly values of air humidity, water vapour pressure and number of sunny hours from July of the preceding year to August of the current year over the period 1971-2003.

Reference:

COOK , A., E., KAIRIUKŠTIS , L., A., 1990: Methods of Dendrochronology. Applications in the Environmental Sciences, Kluwer Academy Publishers, Dordrecht, 394 pp.

FRITTS, H., C., 1976 : Tree rings and climate. London, Academic Press..567 pp.