

## CYTOGENETIC STUDIES OF FOREST TREES AND SHRUBS SPECIES

Borzan, Ž. & Schlarbaum, S. E. (eds.), 1997: *Cytogenetic studies of forest trees and shrub species*. Proceedings of the First IUFRO Cytogenetics Working Party S2.04-08 Symposium, September 8-11, 1993, Brijuni National Park, Croatia. Croatian Forests, Inc., Zagreb & Faculty of Forestry, University of Zagreb, 344 pp., ISBN 953-6307-28-6.

The well-done, hard-covered and particularly colour-illustrated publication contains most of the papers presented at the first meeting in the new era of IUFRO Cytogenetic Working Party which recovered its self-existent activity after the many-years pause. Previous meeting took place in 1976 and therefore the new integrated view on the actual situation in forest cytogenetic research is expected.

Twenty-eight papers included in the Proceedings are arranged into 5 sections. Section 1 **Chromosome and genome evolution** gives an excellent theoretical frame for the study of the karyotypic evolution and nucleolar polymorphism of forest trees (papers of Butorina and Muratova, respectively) as well as the critical analysis of the actual problem of variable genome size in plants (Greilhuber).

Some new advanced methods and approaches used in the chromosome studies are described in Section 2: **Chromosome structure, mapping and engineering**. For example, cytological analysis of transgenic plants (Jelenić *et al.*), fluorescent banding of chromosomes (Papeš *et al.*), methods of chromosome isolation and induction of nuclei (Schlarbaum *et al.*), computer image analysis (contributions of Guttenberger and Nakamura and Fukui, respectively), as well as fluorescence *in situ* hybridization (FISH), laser microdissection of chromosomes, direct-cloning and direct-labeling of rDNA (Nakamura and Fukui) are presented in above mentioned chapter.

In addition, traditional and generally accepted cytogenetic and cytological techniques were used in the papers included in Section 3: **Chromosome behaviour and karyotypic variability**. Most of the contributions integrated in this group deals with the intraspecific or interspecific variability of karyotypes and with the occurrence and frequency of meiotic disturbances in the different taxonomic units or hybrids.

Section 4 **Induced cytogenetic anomalies by environmental changes** is oriented on the cytological study of forest trees affected by the adverse conditions, especially increased UV-radiation (Bavcon *et al.*), ionizing radiation (Butorina *et al.*), high temperatures and chemical mutagens (Mashkina),

influence of ozone (Müller *et al.*) or general atmospheric pollution (papers of Druškovič, Mičičeta and Murín, Zoldoš *et al.*, and Zujeva *et al.*, respectively).

Section 5 **Cytogenetics in tree improvement** contains the papers which deal with the cytogenetic and cytological aspects of interspecific hybridization of willow (Borzan *et al.*), poplar (Sivolapov and Blagodarova), silver fir (Kormuťák) and pine (Kormuťák and Salaj), as well as with the cytogenetic study of *in vitro* cultured tissues (Bonga *et al.*). This section demonstrates the close relationship between the traditional chromosomal studies, different aspects of forest tree improvement and other cytological research, as it's mentioned by Borzan *et al.* in the preface to the special issue of *Forest Genetics* 3(3), pp. 125-126. It should have been more appropriate if the paper of Cesar: The mitotic activity and the distribution of nuclei in vegetative buds of Norway spruce (*Picea abies*) *in vitro* and *in vivo* was integrated in this section instead of Section 3: Chromosome behaviour and karyotypic variability.

Unfortunately, proceedings of Brijuni symposium were issued with appreciable delay caused by the financial difficulties (more information see in "Preface" signed by the editors) and especially from the point of view of development and modernization of the computer image-analysing technology the four-year lapse seems to be yet rather long. On the other hand, relatively long run from the acceptance of papers (January, 1994) to their publication (November, 1997) enabled their consistent improvement by the editors and almost complete elimination of eventual graphic or linguistic imperfections. This way, presented Proceedings shows a very good standard in the form and contents and brings the real and objective information of the problems and aims of cytogenetics of forest trees in 90's. Hence, I would like to recommend this book into the attention not only for the cytogeneticists, but also for students and specialists in other genetic and cytological disciplines.

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