

CYTOGENETIC STUDIES OF FOREST TREES AND SHRUBS

IUFRO Cytogenetic Working Party S2.04–08 "Cytogenetic Studies of Forest Trees and Shrubs – Review, Present Status and Outlook on the Future" Graz, September 6–11, 1998

Five years after the last meeting of the IUFRO Cytogenetic Working Party S2.04–08 on Brijuni Island in Croatia, a new session of the Working Party was held in the city of Graz in Austria under the auspices of the Institute of Plant Physiology of the Karl Franzens University in Graz. The organizers of the meeting, Dr. Helmut Guttenberger and Dr. Maria Müller have welcomed 29 participants from 12 countries across Europe, America and Asia. In a hospitable and cooperative atmosphere of the meeting the 23 oral contributions and posters were presented during the session.

An overwhelming majority of them have dealt with the different aspects of karyological structure in forest trees, shrubs and exceptionally also in fruit trees. One paper has concerned the early development and differentiation of generative buds in *Larix decidua*, still other the biochemistry of *Abies alba* embryogeny. Among chromosome studies presented so far the data on karyological structure of the species *Picea abies*, *Cryptomeria japonica*, *Chamaecyparis obtusa* and *Prunus domestica* were provided together with the results of cytogenetic relationship analysis within the genera *Juniperus* and *Leucaena*. In case of *Picea abies* this approach has also been extended of in vitro karyology and its comparison with the situation as found under in vivo conditions. Chromosome alternations accompanying in vitro cultivation of forest tree tissues have also been illustrated on the example of trisomic somatic embryos of *Picea abies* as well as on the examples of embryogenic culture of *Abies alba* with the same chromosome complement and chromosome mosaicism in somatic cells of *Acacia niotica*. Effects of

the environmental factors on cytogenetic stability of forest trees was analyzed with respect to the chromosome changes in *Picea abies* seedlings as revealed after their exposure to the UV-B radiation. Also, the air pollution has in this connection been analyzed from the standpoint of meiotic irregularities accompanying pollen development and viability in *Pinus sylvestris*. In addition to the natural environmental influences the effects of externally applied jasmonic acid and glutathione have also been analyzed in *Picea abies* with special reference to the frequency of induced chromosome aberrations in its seedlings. As far as the methodological aspects of conifer karyology are concerned, a novel computer program enabling the enter of karyological data in a standardized manner was introduced for the entire Pinaceae family offering the possibility of their mutual comparison via Internet. As an outlook for the 21st century research, the relationship between fluorescent chromosome banding and DNA sequences in conifers has been presented combining both a classical karyotype approach and molecular biology techniques. All the contributions presented on the meeting will be published in a book form by Arbora Publishers, Zvolen. In a conclusion of the meeting a change at the position of Cytogenetic Working Party coordinator was announced. Professor Želimir Borzan of the University of Zagreb had taken his new position replacing Professor Scott Schlarbaum of the University of Tennessee who was appointed with coordination of other Working Party.

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