



INTERNATIONAL POPLAR COMMISSION

22nd Session

Santiago, Chile, 29 November – 2 December 2004

THE CONTRIBUTION OF POPLARS AND WILLOWS TO SUSTAINABLE FORESTRY AND RURAL DEVELOPMENT

Abstracts of Submitted Papers



International Poplar Commission
Forest Resources Division
Forestry Department

Working Paper IPC/2
FAO, Rome, Italy

Disclaimer

These Abstracts of Submitted Papers do not reflect any official position of FAO but are to provide early release of information on on-going International Poplar Commission initiatives and its member country activities and programmes to stimulate dialogue between Poplar and Willow stakeholders around the globe.

The designations employed and the presentation of material in this publication do not imply the expression of any opinion whatsoever on the part of the Food and Agriculture Organization of the United Nations concerning the legal status of any country, territory, city or area or of its authorities, or concerning the delimitation of its frontiers or boundaries.

Comments and feedback are welcome.

For further information please contact:

Mr. Jim Carle
Secretary
International Poplar Commission
Technical Statutory Body
Forestry Department
Food and Agriculture Organization of the United Nations (FAO)
Viale delle Terme di Caracalla
I-00100 Rome
ITALY
E-mail: Jim.Carle@fao.org

For quotation:

FAO, October, 2004. Abstracts of Submitted Papers prepared for the 22nd Session of the International Poplar Commission, jointly hosted by FAO and the National Poplar Commissions of Chile and Argentina; Santiago, Chile, 29 November – 2 December, 2004. International Poplar Commission Working Paper IPC/2. Forest Resources Division, FAO, Rome (unpublished).

Web references:

For details relating to the International Poplar Commission as a Technical Statutory Body of FAO including National Poplar Commissions, working parties and initiatives can be viewed on <http://www.fao.org/forestry/ipc> and highlights of the 22nd Session of the International Poplar Commission, 2004 can be viewed on <http://www.fao.org/forestry/ipc2004>.



INTERNATIONAL POPLAR COMMISSION

22nd Session

Santiago, Chile, 29 November – 2 December 2004

THE CONTRIBUTION OF POPLARS AND WILLOWS TO SUSTAINABLE FORESTRY AND RURAL DEVELOPMENT

October 2004

ACKNOWLEDGEMENTS

These Abstracts of Submitted Papers are the product of a global team of dedicated people willingly giving of their time and specialist expertise. It is encouraging to see the diversity of topics selected by the authors, reflecting the topical issues of 28 countries, in all temperate and boreal regions of the world. Jim Richardson (Canada), Jud Isebrands (USA), Jim Ball (UK/Italy), Stefano Bisoffi (Italy) and Jim Carle (FAO) of the Scientific Committee undertook the evaluation, review and allocation of abstracts for plenary, oral or visual presentations. The communications with all authors, as usual, was most efficiently coordinated by the IPC administrative assistant, Graciela Andrade (FAO). The computer and database expertise of Alberto Del Lungo (FAO consultant) was critical in tracking and managing the paper summary review process in an accurate and orderly manner. Michèle Millanès (FAO consultant) devoted long hours during her summer vacation to editing and formatting of the abstracts, supported most ably by Jim Richardson (Canada). Santiago Barros (Chile) and Elvira Petray (Argentina) of the joint Organizing Committee were most effective champions of contributions from Chile and Argentina as host nations.

To all persons who contributed to this publication, the International Poplar Commission and its members, we express our grateful thanks.


FOREWORD

Poplars and Willows, which account for an estimated 70 million ha of natural and planted forests globally, are among the fastest-growing trees in temperate regions and are easy to cultivate and form an important component of forestry and agricultural systems, often for small-scale farmers. They provide a wide range of wood products (industrial roundwood and poles, pulp and paper, reconstituted boards, plywood, veneer, sawn timber, packing crates, pallets, furniture etc); non-wood products (fodder, fuelwood etc); and services (shelter, shade and protection of soil, water, crops, livestock and dwellings). Poplars and Willows play an important role in phyto-remediation of severely degraded sites, rehabilitation of fragile ecosystems (including combating desertification), forest landscape restoration, often integrated with agriculture, horticulture, viticulture and apiculture and as fast growing species are effective at sequestering carbon. They create employment, boost exports and contribute to social and economic development and sustainable livelihoods in rural areas.

The functions of the International Poplar Commission are to study the scientific, technical, social and economic aspects of poplar and willow cultivation, to promote the exchange of ideas and material among research workers, producers and users, to arrange joint research programmes, to stimulate the organization of congresses and study tours, to report and make recommendations to National Poplar Commissions and poplar researchers, growers and users. The IPC formal Sessions are held in different regions of the world to address topical issues and demonstrate unique applications of Poplar and Willow culture and management reflecting their priority social, culture, environmental and economic needs.

The 22nd Session of the International Poplar Commission will bring together policy makers, planners, managers, users, academics and researchers from the public and private sectors and civil society to address topical issues related to the theme *“The Contribution of Poplars and Willows to Sustainable Forestry and Rural Development”*. This will embrace the application of Poplars and Willows in multi-disciplinary and inter-sectoral land-uses.

A priority of the IPC is to translate Poplar and Willow culture and policies into implementation and science into practice to achieve sustainable forestry, livelihood and rural development. This Book of Abstracts will help to facilitate this, firstly by presentation of the paper summary and by listing of author e-mail coordinates for follow up. The book is presented in accordance with primary working party topic, within which, papers are listed in author in alphabetic order. This will allow participants to the 22nd Session to prepare for presentations and follow up discussions and dialogue on topical issues in plenary and working sessions. It is hoped that this Book of Abstracts will facilitate stimulating dialogue between Poplar and Willow stakeholders, particularly in transfer of knowledge and technology between developed countries, developing countries and those with economies in transition to build their capacity and capability in Poplar and Willow culture and applications in sustainable forestry and integrated rural development.



M. Hosny El-Lakany
Assistant Director-General
Officer-in-Charge of the Forest Resources Division
Forestry Department

TABLE OF CONTENTS

(BY SUBJECT)

	<u>Page</u>
FOREWORD	i
WORKING PARTY ON POPLAR AND WILLOW GENETICS, CONSERVATION AND IMPROVEMENT	1
Abalos R. Marta I., Soto Hernán, Salinas Aldo – <i>Trials of Willow (Salix spp.) Species and Provenances in the North, Central and South Areas of Chile</i>	3
An Xinmin, Zhang Zhiyi, Wang Dongmei – <i>Isolation of Key Genes Involved in Flowering from Populus tomentosa Carr. and Modification of Flowering in Transgenic Plants</i>	4
Augustin Sylvie, Carré Gabriel, Courtin Claudine, Dubois Valérie, Génissel Anne, Lorme Philippe, Wenes Anne Laure, Réjasse Agnès, Pilate Gilles, Leplé Jean Charles, Bourguet Denis – <i>Transgenic Poplar and the Poplar Leaf Beetle : State-of-the-Art on the Risk of Evolution of Insect Resistance</i>	6
Beuker Egbert, Stenvall Niina, Kasanen Risto, Luoranan Jaana, Gang Zhang – <i>Breeding and Cultivation of Aspen and Hybrid Aspen in Finland</i>	7
Biswas Sas, Alpana – <i>Emerging Trends in Clonal Taxonomy of Poplars Introduced in India for Certification and Sustainable Utilization</i>	8
Cabello Angel, Villacura Luis, Ulloa Jaime – <i>Growth Comparison of Four Poplar Clones en Region VII of Chile</i>	10
Cabello Angel, Villacura Luis, Ulloa Jaime, Grez Iván – <i>Test of Poplar Clone Introduction in Region VII, Chile</i>	11
Calagari M., Jafari Mofidabadi A. - <i>Intraspecific Hybridization in Populus euphratica Oliv. Using in vitro Technique</i>	12
Calagari M., Jafari Mofidabadi A., Tabari M., Hosseini S.M. – <i>Investigation of Morphological and Genetic Variation in Natural Populations of Populus euphratica Oliv. in Iran</i>	13
Calderón A.D., Riu N.E., Bustamante J.A., Settepani V.G., Pérez S.A. – <i>Behaviour of Populus sp. in Mendoza, Argentina</i>	14
Calderón A.D., Riu N.E., Bustamante J.A., Settepani V.G., Pérez S.A. - <i>Phenological Observations on 20 Poplar Clones in Mendoza, Argentina</i>	15
Camussi A., Stefanini F.M. – <i>The Identification of Poplar Clones by Montecarlo Methods: The Random Forests</i>	16
Caparrini S., Velasco R., Camussi A., Racchi M.L. – <i>Efficient Detection of DNA Polymorphism in the Populus Genus by Single-strand Conformational Polymorphism of Catalase Genes</i>	17
Cerrillo Teresa – <i>Comparative Growth of Poplar Clones in the South of Santa Fé, Argentina – First Report</i>	18
Cortizo Silvia, Divo de Sesar Marta, Mema Vanesa – <i>Rooting of Uninodal Cuttings of Populus spp. In Greenhouse</i>	19
De Boever Lieven, Van Peteghem Pierre, Van Acker Joris – <i>Early Selection of Willow Clones Based on Physical-Mechanical Properties</i>	20
De Boever Lieven, Van Acker Joris, Stevens Marc – <i>Variability of Physical Properties in a Multiclonal Stand of Populus deltoides x nigra</i>	21

Deqiang Zhang, Meng-Zhu Lu, Minjie Wang, Ling Li – <i>Repression of the UDP-Glucose Dehydrogenase Resulted in Decreased Pentosan Content in Transgenic Tobacco</i>	22
González Antoñanzas F., Grau Corbí J.M., Montoto Quinteiro J.L. – <i>Experimental Comparison of New Poplar Clones for Non-Intensive and Sustainable Populiculture</i>	23
González Antoñanzas F., Grau Corbí J.M., Montoto Quinteiro J.L., Zuloaga Bueno F. – <i>The Populus sp. Clone Collection of the “Sierra de Pela” Populetum in Campisábalos (Guadalajara), Spain</i>	24
Héois Bernard, Baltzinger Marie – <i>Commercialization of Poplar Clones in Europe – Comparison Between European Regulations</i>	25
Huang Qinjun, Su Xiaohua, Zhang Xianghua – <i>Mapping and Quantitative Trait Loci (QTL) Analysis for Wood Properties in Populus deltoides x P. cathayana</i>	26
Jinhua Li, Qiwen Zhang – <i>Interspecific Hybrid Between Populus deltoides and Five Provenances of P. cathayana</i>	27
Johnson Jon D., Shan Zhao – <i>Nitrogen Use Efficiency and Productivity of Hybrid Poplars: Clonal Differences Related to Parentage</i>	28
Kajba D., Ballian D., Heinze B., Idzajtíc M., Bogdan S. – <i>Populus nigra ssp. Caudina and Its Importance for Forest Tree Improvement and Conservation of Poplar Genetic Resources</i>	29
Keary Kevin, A’Hara Stuart, Whitaker Helen, Cottrell Joan – <i>Genetic Variation in Black Poplar from Ireland Assessed using Microsatellites</i>	30
Kuzovkina Y.A., Quigley M.F. - <i>Differential Response of Willow (Salix L.) Species to Acute Ozone Exposure</i>	31
Lin Shanzhi, Zhang Zhiyi, Lin Yuanzhen, Guo Huan - <i>Characterization and cDNA Sequence of G6PDH from Populus suaveolens in Freezing-Acclimation-Induced Freezing Resistance</i>	32
Marinucci L., Sharry S., Abedini W. – <i>An Efficient Method to Produce Highly Regenerative Tissues from Populus deltoides cv. “Catfish 2” and “Catfish 5” for Future Use to Genetic Transformation</i>	33
Mertens Patrick – <i>Selecting Cultivars for Mixed Stands and Periodic Renewals: Two Key issues for Sustainable Plantation Management and Disease Resistance</i>	34
Mertens Patrick – <i>The Return of Selections of Populus deltoides x nigra (P. x euramericana)</i>	35
Michiels Boudewijn, Steenackers Marijke, Van Slycken Jos, De Boever Lieven – <i>New Belgian Poplar Clones Results of Controlled Crossings with P. maximowiczii</i>	36
Monteoliva Silvia E., Marlats Raúl M. – <i>Growth and Fiber Length in Willow Clones and Their Interaction Clone-Plantation Site</i>	37
Muhs H.J., Fladung M., Schmitt U., Meier D., Puls J., Schwab E., Gieffers W. – <i>Wood Biological, Wood Chemical, Wood Technological, and Phytopathological Investigations in ROLC Transgene Aspen Grown in a Field Trial</i>	38
Orlovic Sasa, Galic Zoran, Klasnja Bojana, Pilipovic Andrej – <i>Influence of Selection of Black Poplar on Water Use Efficiency</i>	40
Pan Mingjian, Tu Zhongyu, Wang Baosong, Guo Qun – <i>Willow Genetic Improvement in China</i>	41
Qiwen Zhang, Jinhua Li – <i>New Poplar Cultivars for Industrial Wood Plantations in China</i>	42
Sabatti Maurizio, Ricciotti Luca, Paolucci Isabella, Gaudet Muriel, Nardin Fabrizio, Scarascia Mugnozza Giuseppe – <i>Poplar Germplasm Resources in Short Rotation Forestry (SRF): Implications for Biomass Production</i>	43

Senisterra Gabriela, Murace Mónica, Marlats Raúl - Preliminary Study of Health State of Populus Clones Originated from Intra and Interspecific Crossings	45
Singh N.B., Kumar Dinesh – Estimation of Genetic Parameters for Breeding Strategies on Poplar (<i>Populus deltoides</i> Bartr.) Based on Factorial and Nested Mating Designs	46
Singh N.B., Singh Kadam – Heterosis for Growth Traits in Intra-specific Hybrids of Poplar (<i>Populus deltoides</i> Bartr.)	47
Singh N.B., Huse Santosh A. – Improvement of Tree Willow in India: I. Variation of Wood Characteristics	48
Singh N.B., Huse Santosh A. – Improvement of Tree Willows in India: II. Genetic Variability of Photosynthetic Traits and their Relationship	49
Singh N.B., Huse Santosh A. – Improvement of Tree Willows in India: III. Variation on Quantitative Genetic Parameters on Growth Traits	50
Singh N.B., Huse Santosh A. – Improvement of Tree Willows in India: IV. Estimates of Genotypic and Phenotypic Correlation Coefficients and Response to Indirect Selection	51
Singh N.B., Huse Santosh A., Gupta R.K. - Principal Component Analysis of Tree Willow Clones for Genetic Improvement of Quantitative Traits	52
Singh N.B., Jha R.K. – Variability, Associations and Path Coefficient Analysis in Poplar (<i>Populus deltoides</i> Bartr.)	53
Singh Rajbir, Bangarwa K.S. – Evaluation of Various Clones of <i>Populus deltoides</i> for Root and Shoot Characters under Nursery Conditions	54
Smart Lawrence B., Lin Juan, Kopp Richard F., Phillips Ingrid S., Cameron Kimberly D., Volk Timothy A., White Edwin H., Abrahamson Lawrence P. - Genetic Improvement of Shrub Willow (<i>Salix</i>) Crops for Bioenergy and Environmental Applications	55
Su Xiao-hua, Huang Qin-jun, Zhang Bing-yu, Zhang Xiang-hua – Advances in Genetic Engineering of <i>Populus</i> in China	57
Thomas Barb – Poplar Breeding in the Boreal Regions of Canada – Challenges and Opportunities	58
Toplu Ferit – Recent Developments on the Breeding and Conservation of Gene Resources of Black Poplar (<i>Populus nigra</i> L.) in Turkey	59
Tsarev Anatoly P. - Selection of Willows in the Russian Federation	60
Vanden Broeck An, Quataert P., Cox K., Storme V., Boerjan W., Van Slycken J. – Potential Gene Flow Between Cultivated Poplars and Native Black Poplars (<i>Populus nigra</i> L.) in Belgium	61
Vildanova G., Mapelli S., Nasirova G., Holmuratov E., Hakimov H., Hanazarov A. – In Vitro Selection and Propagation of Poplar Varieties and Hybrids on Tolerance to Abiotic Stresses	63
Yeong-Bon Koo, Jin-Kye Yeo, Wan-Yong Choi, Tae-Su Kim, Chong-Supp Shim – Selection of Superior Clones from Analysis of Growth Performance in <i>Populus davidiana</i> at Age 12	64
Yong-Yul Kim, Bum-Yong Kang, Yong-Pyo Hong, Yeong-Bon Koo – Quantitative Trait Loci (QTL) Mapping for 2-year Growth Traits of Single Full-Sib Family in <i>Populus davidiana</i> Dode	65
Zamudio Francisco - Evaluation of New Poplar Hybrids for Industrial Uses and Environmental Protection in Chile	66

Zelasco Samanta, Balestrazzi Alma, Carbonera Daniela, Confalonieri Massimo, Giorcelli Achille, Mattivi Fulvio, Bonadei Martina, Bisoffi Stefano – <i>Investigation of Horizontal Gene Transfers from GM Poplar Plants to Soil Micro-Organisms and of the Effect of GM-Induced Production of Resveratrol</i>	67
Zhang Deqiang, Zhang Zhiyi, Yang Kai, Li Bailian – <i>Genetic Mapping in Populus tomentosa x P. bolleana and Populus tomentosa using AFLP Markers</i>	68
Zhang Deqiang, Zhang Zhiyi, Yang Kai, Li Bailian – <i>Quantitative Trait Loci (QTL) Analysis of Leaf Morphology and Spring Bud Flush in Populus tomentosa</i>	69
Zhang Qian, Zhang Zhiyi, Lin Shanzhi, Lin Yuanzhen - <i>Molecular Detection and Insect Feeding Tests of 2-year Old Transgenic Poplar with the CPTI Gene</i>	70
Zhuge Qiang, Wang Jiechen, Chen Ying, Guo Tongbin, Ji Baozhong, Huang Minren, Huang Minxiu - <i>Study on Insect-Resistance in Transgenic Poplars Transformed with Cpti and Bt Genes</i>	72
WORKING PARTY ON POPLAR AND WILLOW PRODUCTION SYSTEMS	73
Abd El-Dayem A.M.A., Sarhan A.M., Darwesh M.A., Saied Ahmed M.I. – <i>Endogenous Factors Affecting Rooting of Populus Species</i>	75
Abrahamson Lawrence P., White Edwin H., Volk Timothy A., Smart Lawrence B. – <i>Multiple Benefits of Willow Energy Crops</i>	76
Achinelli Fabio, Aparicio Alejandro, Prada Enrique, Marlats Raúl – <i>Weed Control with Herbicides in Salicaceae Plantations of Buenos Aires, Argentina</i>	77
Acma Bulent – <i>New Horizons of Natural Resources in the Southeastern Anatolia Region of Eurasia and the Southeastern Anatolia Project (GAP) in Turkey</i>	78
Berthelot Alain, Augustin Sylvie, Godin José, Decocq Guillaume – <i>Inventory of Biodiversity in Poplar Stands in the Picardie Region</i>	79
Bonari Enrico, Picchi Gianni, Fraga Alejandro, Ginanni Marco, Guidi Werther, Piccioni Emiliano – <i>Comparison of Three Coppice Intervals on a Nine Years Poplar Biomass Production</i>	80
Borodowski Estebán D., Suárez Raúl O. – <i>Seasonal Growth of Populus deltoides Clones in the Delta of the Parana River, Argentina</i>	82
Calagari M., Modir-rahmati A., Asadi F., Ghasemi R. – <i>A Study of Poplar Biomass Utilization as a Source of Fodder</i>	83
Calderón A.D., Riu N.E., Bustamante J.A., Settepani V.G., Pérez S.A. – <i>Poplars: Planting Density in Mendoza, Argentina</i>	84
Calderón A.D., Pérez S.A., Roig F.A., Riu N.E., Bustamante J.A., Settepani V.G., Campos S. - <i>Poplars: Tree Growth Ring Studies and Site Quality</i>	85
Calderón A.D., Riu N.E., Bustamante J.A., Settepani V.G., Pérez S.A. – <i>Populus sp.: Trial of Different Planting Stock Types and Planting Seasons at Mendoza, Argentina</i>	86
Casaubon E., Gurini L., Cueto G., Gómez L., Zanelli M., Berrondo G., González A. – <i>Characterization of Forested Sites of Salix nigra 4 and Salix babylonica x Salix alba CV 131/27 in the Low Delta of the Parana River (Argentina)</i>	87
Chocovar Alcira, Picchi Carlos – <i>Spacing Trial in Relation to Dendrometric Values in Poplar Plots at the “Poza de las Avispas” Forest Experiment Station, Province of Jujuy, Argentina</i>	89
Corvalán Patricio, Álvarez Pamela – <i>Taper Equation for Populus x euramericana cv 1-214 Clones in Two Plantation Stands, VI Region, Chile</i>	90

Denegri Gerardo, Achinelli Fabio, Marlats Raúl – <i>Costs Comparison of Different Poplar (Populus spp.) Establishment Systems for the Argentinian Humid Pampas</i>	91
Dhiman R.C., Gandhi J.N. – <i>Replacement of Mortality in Poplar Plantations</i>	92
Eaton Jake – <i>Growth Response of Hybrid Poplar to Different Irrigation Levels</i>	93
Fan Yongming, Zhang Zhiyi, Xie Yimin, Ren Dakai, Luo Yuanyuan, Wu Yuying, He Jing – <i>The Fibre Morphology Variation of Triploid Clones of Populus tomentosa and its Supposed Harvesting Age for Paper Industry</i>	94
Galic Zoran, Ivanisevic Petar, Orlovic Sasa, Pekec Sasa – <i>Influence of Soil Fertility of Some Black Poplar Clones on Fluvisols and Humofluvisols in the Middle Danube Basin</i>	95
Gardiner Emile S., Stanturf John A., Hamel Paul B., Leininger Theodor D. – <i>Early Stand Development, Carbon Sequestration and Wildlife Use Under Conventional Versus Intensive Afforestation Practices in the Lower Mississippi Alluvial Valley</i>	96
Gennari Ana, Prada Enrique, Achinelli Fabio, Marlats Raúl – <i>Juvenile Growth Patterns in Poplar Clones (Populus spp.) in the Argentinian Humid Pampas</i>	97
Gennari Ana, Prada Enrique, Achinelli Fabio, Vivas Pablo – <i>Planting Stock Management to Improve Survival at Planting of Populus deltoides Bartr. ex Marsh. Clones Obtained in Argentina</i>	98
Hassan Mohammad K., Haji Salim H. – <i>The Financial Analysis of Poplar Populus nigra L. Plantations</i>	99
Katwal R.P.S. – <i>Contributions of Poplars and Willows to Sustainable Forestry and Rural Development in India</i>	101
Keary Kevin, Bulfin Michael, Mac Siúrtaín Máirtín – <i>Height and Diameter Growth of Four-Year Old Hybrid Poplar Clones</i>	102
Kovačević Branislav, Rončević Savo, Ivanišević Petar – <i>Influence of Sources of Variation on Rooting of Hardwood Cuttings of Black Poplar (Section Aigeiros)</i>	103
Kumar Gulshan – <i>Growing Poplars in Private Farm Forestry in India: Sustainability Issues</i>	104
Labrecque M., Teodorescu T.I. - <i>From Living Walls to Wood Panels: Multiple Uses of Willow Stems Produced in Short Rotation Culture in Southern Quebec, Canada</i>	105
Lin Shanzhi, Zhang Zhiyi, Lin Yuanzhen, Zhang Qian, Guo Huan – <i>The Role of Calcium and Calmodulin in Freezing-Acclimation-Induced Freezing Resistance of Populus tomentosa Cuttings</i>	106
McIvor Ian, Hurst Sarah, Charles John, Fung Lindsay – <i>Poplar and Willow Development and Use in New Zealand</i>	107
Mertens Patrick - <i>Aspen Can Be Conserved by Changes in Silvicultural Practices in Belgium</i>	108
Mertens Patrick – <i>Social, Economical and Ecological Resiliency as Major Factors for Poplar Culture Sustainability</i>	109
Riu N.E., Sanjurjo V.C., Bustamante J.A., Calderón A.D. – <i>Seven Years of Poplar Response to Different Irrigation Regimes</i>	111
Riu N.E., Settepani V.G. – <i>Six Years of Poplar Response to Different Irrigation Regimes</i>	112
Shedeed M.R., Mousa A.A., Abo Tabel N.S., Abd El-Dayem A.M., Gharib H.A. – <i>Effect of Irrigation by Industrial Sewage Water on the Growth of Two Poplar Species</i>	113
Sixto Hortensia, Aranda Ismail, Alba Nuria, Grau José Manuel - <i>Methodology for the Detection of Salt Tolerance Differences among P. Alba L. Clones Using Chlorophyll Fluorescence as a Tool</i>	114
Sotomayor Alvaro, Ulloa Jaime, García Edison – <i>Agroforestry with Populus in Chile</i>	115

Stanton Brian J. – <i>Benefiting Humankind Through Improved Application of Poplar Research and Technology</i>	116
Stanturf John A., Bland Dexter, Samuelson Lisa, Leininger Theodor, Burke Bryce – <i>Three-Year Growth Response of Four Clones of Eastern Cottonwood (<i>Populus deltoides</i> Bartr. ex Marsh.) to Fertigation</i>	118
Suárez Raúl O. – <i>Poplars Integrated with Cattle in an Associated and Sustainable Way</i>	119
Toro J., Fernández A., Ulloa J., Villacura L. – <i>Productivity Decline and Reduced Soil Nutrient Availability After Several Rotations in Intensively Managed <i>Populus euramericana</i> Plantations in the Central Valley of Chile</i>	120
Vallejos Barra Oscar Santiago – <i>Simulator of Growth for <i>Populus</i></i>	121
van Oosten C., Zabek L.M. – <i>Fertilization of Short-Rotation Intensive-Culture (SRIC) Hybrid Poplar Plantations in Southwestern British Columbia, Canada</i>	122
Weih M., Nordh N.E. – <i>Comparison of Willow Growth in Pot and Field Conditions Under Various Treatments</i>	123

WORKING PARTY ON LOGGING AND UTILIZATION OF POPLAR AND WILLOW WOOD	125
---	------------

Abalos Romero Marta I. – <i>Industrialization of the Chilean Basket Willow</i>	127
Alvárez Carlos, Romero Pedro, Padro Antonio – <i>Study of the Quality of Poplar Wood for Veneer Peeling in an Experimental Plantation</i>	128
Cortizo Silvia, Mema Vanesa, Pathauer Pablo, López Gustavo – <i>Basic Wood Density Estimation Using Pilodyn in Breeding Programs of <i>Populus</i> spp.</i>	129
del Pozo Santiago – <i>Chilean National Forest Extension Programme Smallholder Poplar Plantations in the VI Region</i>	130
González Patricio, Cerda Ignacio – <i>Industrial Model for the Use of Poplar Plantations of Small and Medium Producers in the Central Area of Chile</i>	131
Henin Jean-Marc, Mertens Patrick, Jourez Benoît – <i>Definition of a Methodology to Assess the Yield and Quality of Poplar Peeling Wood – Application on Six <i>Populus x interamericana</i> (<i>Populus deltoides</i> x <i>Populus trichocarpa</i>) Clones</i>	132
Shengzuo Fang, Wenzhong Yang, Xiangxiang Fu – <i>Variation in Microfibril Angle and its Influence on Wood Properties of Poplars</i>	133
Verani Stefano, Sperandio Giulio – <i>Techno-Economic Evaluation of the Use of Mechanization in Poplar Plantation Harvesting</i>	134
Villegas María Silvina, Marlats Raúl – <i>Measurement of Wood Optical Properties in Willow</i>	135

WORKING PARTY ON ENVIRONMENTAL USES OF POPLARS AND WILLOWS	137
---	------------

Copeland Ruth – <i>Nitrate Leaching and Biomass Production from Short Rotation Coppice Fertilized with Dairy Slurry</i>	139
Dickinson Nicholas – <i>Manipulation of Brownfield Contamination Using Willow and Poplar</i>	140
Dimitriou Ioannis, Aronsson Pär – <i>Full-scale Phytoremediation Systems Combined with Wood Fuel Production Using Short Rotation Willow Coppice</i>	142
Dos Santos M.N., Wieshammer G., Vemon R.M., Wenzel W. – <i>Heavy Metal Tolerance in Hydroponically-Grown <i>Salix</i> Species: Perspectives for Phytoextraction</i>	143

Doty Sharon L., Moore Allison L., Vajzovik Azra, Nishimura Joel D., Meilan Richard, Gordon Milton P., Strand Stuart E. – <i>Degradation of Organic Environmental Pollutants by Poplar</i>	145
Duggan Joddie – <i>A Willow Vegetation Filter Treating Landfill Leachate: Preliminary Findings from a Fully-lined Field-scale System in the United Kingdom</i>	146
Gardiner Emile S. – <i>Establishment of Black Willow (Salix nigra Marsh.) for Restoration of Bottomland Hardwood Forests in the Lower Mississippi Alluvial Valley, USA</i>	147
Heinsoo Katrin, Koppel Andres – <i>Experimental Sustainable Wastewater Purification by Salix in Small Estonian Communities</i>	148
Hendrickson Cheryl – <i>Successional Companion Planting of Salix for Environmental Applications in Canada</i>	149
Isebrands J.G. – <i>Field Evaluations of Phytoremediation of Volatile Organic Compounds with Poplars and Willows in the Midwestern USA</i>	150
Kuzovkina Y.A., Quigley M.F. – <i>Metal Resistance and Accumulation in North American Willow (Salix L.) Species</i>	151
Matthei Jensen Enrique – <i>Salicaceae: Biotechnological Tools for the Restoration of Streams with Torrential Fluvio-metric Features</i>	152
Meng Ping, Zhang Jingsong, Zhang Qiwen – <i>Effects of Poplar-Wheat Intercropping on the Atmospheric CO₂ Concentration Above the Crop Canopy</i>	153
Riddell-Black Drusilla, Isebrands Jud G., Alker Gill – <i>Meeting Regulatory Requirements Using Poplar and Willow for Wastewater Treatment</i>	154
Scarascia Mugnozza Giuseppe, Calfapietra Carlo, Sabatti Maurizio, De Angelis Paolo - <i>Environmental Aspects of Biomass Production: The “Poplar Free Air CO₂ Enrichment (POPFACE)” Experiment as a Model to Study the Impact of the Increasing CO₂ on Agroforestry Systems</i>	155
Tahvanainen Liisa – <i>Visual Impacts of Energy-Wood Plantations to Rural Landscape as an attraction Factor</i>	157
WORKING PARTY ON POPLAR AND WILLOW DISEASES	159
Bennett Chandalin, Newcombe George, Aime Catherine – <i>Host-range Studies of Melampsora on Salix in the Pacific Northwest Region of the United States</i>	161
Huvenne H., Messens E., De Vos B., Desmet T., Vandriessche G., Steenackers M., Maes M. – <i>Watermark Disease of Willows in Agricultural Areas: A Study of the Effect of Environment and Soil Characteristics on Diseases Expression</i>	162
May de Mio Louise Larissa, Amorim Lilian - <i>Influence of Temperature and Leaf Wetness Duration on the Monocyclic Components of Poplar Rust</i>	163
May de Mio Louise Larissa, Amorim Lilian, Moreira L.M. – <i>Progress of Epidemics and Evaluation of Damage Caused by Rust in Poplar Clones</i>	164
Nasini Marco, Mazzaglia Angelo, Giorelli Achille, Anselmi Naldo - <i>Endophytic Fungi in Poplar Trees</i>	165
Nejad Pajand, Ramstedt Mauritz, Granhall Ulf – <i>Identification Methods of Ice-Nucleation Active (INA) and Pathogenic Bacteria in Woody Plants (Salix) as an Energy Crop</i>	166
Nischwitz Claudia, Newcombe George – <i>The Use of Sphaerellopsis filum for Biological Control of Melampsora species on Populus species</i>	167
Uluer Kazim, Şakir Özyay Faruk, Selek Fazil – <i>Investigation of the Resistance of Some Poplar Clones to the Rust Fungi Melampsora alli-populina Kleb. in Turkey</i>	168

WORKING PARTY ON POPLAR AND WILLOW INSECTS AND OTHER ANIMAL PESTS	169
Alderete Mariela, Liljeström Gerardo – <i>Present Situation of the Population of <i>N. oligospilus</i> Foerster (=N. desantisi Smith) (Hymn.: Tenthredinidae) in the Tañi Valley, Tucuman, Argentina: Future Considerations</i>	171
Alderete Mariela, Fidalgo Patricio – <i>The Parasitoids of <i>Nematus oligospilus</i> Foerster (Hym.: Tenthredinidae) in California (USA) for a Programme of Biological Control in Argentina</i>	172
Alfaro René, González Paola, Villaverde Raúl, Battaglino Nilo, Allegro Gianni, Humble Leland – <i>The Threat of the Ambrosia Beetle, <i>Platypus sulcatus</i> (=mutatus) to World Poplar Resources</i>	173
Aparicio Alejandro, Liljeström Gerardo, Achinelli Fabio, Marlats Raúl – <i>Relationships between Poplar (<i>Populus</i> spp.) Stand Structural Variables and Ambrosia Small-Borer Attacks (<i>Megaplatypus plicatus</i>) (Bréthes)</i>	174
Baldini Aida, Bèche Marcos, Sartori Angelo – <i>Phytosanitary Condition of Poplars and Willows in Chile</i>	175
Charles John, Chhagan Asha, Allan Doug, Fung Lindsay, Hurst Sarah, McIvor Ian – <i>The Willow Sawfly, <i>Nematus oligospilus</i>, in New Zealand: 1997-2004</i>	176
Giménez Rosana A., Moya Mariana C., Michetti Marcelo – <i>Border Row Spray of Poplar Bark with Carbaryl for <i>Megaplatypus mutatus</i> (Coleoptera, Platypodidae) Control</i>	177
Giménez Rosana A., Seoane Nicolás – <i>Chemical Control of Ambrosia Beetles: Effect on the Soil Litter Decomposition</i>	178
Giménez Rosana A., Kesten Eva – <i>Pesticide Effect on Earthworms and Decomposition of Organic Matter in a Silvopastoral System</i>	179
Giménez Rosana Alejandra – <i>Use of X-Rays to Study the Woodborer <i>Megaplatypus mutatus</i> (Chapuis, 1865) (Coleoptera: Platypodidae)</i>	180
Mácola G., García Sáez J.G., Holgado M.G., Fuligna F. – <i>Evaluation of Traps for Monitoring <i>Platypus sulcatus</i> (Coleoptera: Platypodidae)</i>	181
Marquina Jorge, Marlats Raúl, Nuñez Cresto Marcela – <i><i>Platypus mutatus</i> Chapuis (=Platypus sulcatus) Some Characteristics of Galleries Produced by the Attack at Plantations of <i>Populus deltoides</i> cv. (Catfish 2 USA) According to Trunk and Attacked Section Sizes</i>	182
Özay Faruk Ş., Güler Necdet, Uluer Kazim, Selek Fazil – <i>Investigation of <i>Pygaera</i> (Clostera) anastomosis L., an Insect Pest of Poplar</i>	183
Parra Patricio, González Marlene, Contador Patricia, Soto Daniel, Salinas Aldo – <i>Study of the Life Cycle of <i>Tremex fuscicornis</i> Fabr. (Hymenoptera, Siricidae) and Level of Parasitism achieved by <i>Megarhyssa</i> sp. (Hymenoptera, Ichneumonidae) in V and Metropolitan Regions, Chile</i>	184
Ramírez Claudio C., Zamudio Francisco, Verdugo Jaime, Nuñez Mónica E. – <i>Differential Susceptibility to the Aphid <i>Chaitophorus leucomelas</i> (Hemiptera: Aphididae) of Poplar Hybrids Recently Introduced in Chile</i>	185
Selek Fazil - <i>The Lepidoptera Species Harmful to Poplar in the Izmit and Adapazari Regions</i>	186
ALPHABETICAL TABLE OF CONTENTS (by Authors)	187