

***REPORT***

**Santiago,  
Chile,  
28 November to  
2 December 2004**

**22nd session of the  
International Poplar  
Commission  
and 42nd session  
of its Executive  
Committee**

**INTERNATIONAL POPLAR COMMISSION**

**Report of the 22nd Session of the Commission**  
**and of the 42nd Session of its Executive Committee**

**Santiago, Chile, 28 November – 2 December 2004**

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**PART I           REPORT OF THE 42ND SESSION OF THE EXECUTIVE COMMITTEE  
OF THE INTERNATIONAL POPLAR COMMISSION**

**I           ORGANIZATION**

1. The 42<sup>nd</sup> Session of the Executive Committee of the International Poplar Commission (IPC) was jointly hosted by the Governments of Chile and Argentina, and held in Santiago, Chile, on 28 November 2004. Dr S. Bisoffi, Chairman of the Executive Committee, chaired the meeting. It consisted of a closed session of nine members, seven heads or secretaries of Working Parties and the Secretary of the Commission.

**II           THE SESSION**

2. The Session was opened by the Chairman of the Committee. The provisional agenda was adopted.

3. The Chairmen of the Working Parties presented their reports. All reported that they had undertaken a SWOT analysis (strengths, weaknesses, opportunities and threats) in conformity with the Guidelines for Working Parties in a process to reorient their work to better serve member countries and National Poplar Commissions. Members had maintained contacts through the internet and informal meetings to coincide with other bodies such as the International Union of Forestry Research Organizations (IUFRO), the EU Poplar Project and the International Energy Agency (IEA). Contacts had been continued with the European Forest Genetic Resources Programme (EUFORGEN) group. The importance of these links and of the co-ordination of activities was stressed.

- The Genetics, Conservation and Improvement Working Party reported that they had completed an inventory of Poplar and Willow breeding programmes and pollen collection in which a comparison of breeding programmes and opportunities for improved collaboration was evaluated.
- The Logging and Utilization Working Party reported that a revitalization process was being undertaken: update of the Harvesting and Utilization Section of the Global Directory of Poplar and Willow Experts; update of the Working Party portal on the IPC website; development of an outreach programme with member countries; contribution to the Poplar and Willow Book; liaison with other Working Parties; organization of 2006 and 2008 fora in Logging and Utilization of Poplars and Willows; and initiation of new research and development initiatives.
- The Working Party on Poplar Diseases reported that a questionnaire survey was used to: update the list of active Poplar and Willow researchers; identify the most important diseases and their impacts; and identify the role of the Working Party. A joint meeting was proposed with the IUFRO Working Party “Rust of Forest Trees”, University of California, Davis, 24-28 July 2006. Greater outreach could be achieved by linking the IPC website to the “Forent” and “Forpath” list servers. It was highlighted that greater inter-Working Party collaboration was necessary to address many problems.
- The Working Party on Insect Pests reported that the English version of the publication “The damaging insects of poplars” had been expanded as an e-book for ease of update; uploading with photos to the IPC website was planned; and a survey of *Salix* pests was undertaken. It was still proposed to add Poplar and Willow insect pest species to ECOPORT (FAO) and prepare an Expert system for identification of Poplar and Willow insects and their damage.
- The Working Party on Production Systems and Environmental Applications for Poplars and Willows reported that increased scale of Poplar and Willow plantings for provision of environmental services had justified a dedicated Working Party on Environmental Applications

of Poplars and Willows. Thus the former Working Party was renamed Production Systems. The Working Party had organized the International Poplar Symposium (IPS) III, Uppsala, Sweden, 26-29 August 2002. Future activities included assistance to IPS IV, in Nanjing, China in 2006 and links to other IUFRO and IEA-Bioenergy initiatives.

- The new Working Party on the Environmental Application of Poplars and Willows reported on the formulation meeting in Rome, in May 2004, where the objectives, scope and potential work programme were discussed. It had established a portal on the IPC website and proposed to use this as its principal mode of communication for publications, projects, lists of institutions and experts, references, etc. The Working Party would participate in preparation of the Environmental Benefits chapter of the Poplar and Willow Book.
- The Sub-committee for Nomenclature and Registration reported that the Chairman of the Sub-committee was recognized as the Registrar for the genus *Populus*; the cultivar registration and procedures were reviewed and uploaded to the IPC website; a network of 34 countries was established, and initial inquiries were made for the IPC to become the International Cultivar Registration Authorities (ICRAs) for the genus *Salix*. It was highlighted that a large number of new cultivars already in use had not been submitted for registration. Raising awareness and pursuing Poplar institutes in Member countries on this issue was a high priority.
- The Secretariat reported on the potential of the IPC website in providing portals for Working Parties and National Poplar Commissions as a priority focus for 2004-08.

4. The Secretariat informed the Committee of the heads of delegations and names of the candidates proposed by member countries from which its members would be elected for the period 2004-08.

5. The Secretariat informed the Committee that no offers to host the 43<sup>rd</sup> Session of the Executive Committee had been received. However, it was noted that IUFRO planned to hold its International Poplar Symposium in Nanjing, China, in June 2006.

6. Guidelines were given for Working Party Concurrent Sessions and Working Party Business Sessions to stimulate discussions towards the theme of the 22<sup>nd</sup> Session and mandate of the IPC. The Working Parties were given guidelines for reporting outputs and recommendations to the plenary session.

7. New guidelines and registration for the Directory of Poplar and Willow Experts were introduced to account for the emerging applications of Poplars and Willows. Registrations were to be completed electronically together with curriculum vitae to the *Istituto di Sperimentazione per la Pioppicoltura* (ISP) (Casale Monferrato, Italy) for validation before being uploaded to the IPC website maintained by FAO.

8. FAO was specifically requested to:

- Conduct an evaluation of the capacity and capability of National Poplar Commissions and institutions working in Poplar and Willow culture, and provide technical advice where feasible;
- Include Poplars and Willows in the Forest Resources Assessment 2005 and the Integrated Forestry Database on Planted Forests;
- Provide regular maintenance of the IPC website, particularly the Working Party and National Poplar Commission portals now available; and
- Update the Poplar and Willow Experts Directory.

9. An informal proposal was introduced to consider the establishment of a Populetum Hall or Wall of Fame in recognition of excellence in Poplars and Willows. A more detailed justification and proposal will be prepared prior to the 43<sup>rd</sup> Executive Committee meeting.

### III POST-SESSION INFORMAL MEETING OF THE EXECUTIVE COMMITTEE

10. The newly-elected members of the Executive Committee for 2004-08 met informally on 2 December 2004 to elect the Chairman and Vice-chairman of the Committee and to discuss general business.

11. Dr Stefano Bisoffi (Italy) was elected Chairman and Dr Jud Isebrands (USA) was elected Vice-chairman of the Executive Committee, both unanimously. It was agreed that Dr Yeong Bon Koo (Republic of Korea) and Mr J. Richardson (Canada) be co-opted to the Executive Committee. Dr Bisoffi was re-elected Chairman of the Sub-committee on Nomenclature.

12. Dr Bisoffi made a presentation on his vision for the IPC in the coming four years and chaired the following discussion. He identified the challenges as being the need to:

- Translate science into practice from the laboratory to the field by identifying significant problems to poplar and willow culture and pursue solutions with inter-disciplinary teams, calling upon specialist expertise from different Working Parties;
- Review, rationalize and refocus the work programmes of Working Parties in a more result-oriented manner and define their scope of work in response to beneficiary needs, define achievable, time-bound outputs, identify responsibilities and collaborators and scheduled delivery (who, what, when, where, why, how);
- Mobilize National Poplar Commissions to form partnerships between Government, private sector, research fraternity and other stakeholders (communities, NGOs) to ensure transfer of scientific knowledge and technology to/from the field level;
- Maximize use of the IPC website by uploading Working Party outputs, activities, case studies, projects, lists of collaborators, references, etc. for more effective outreach and networking to a wide range of stakeholders;
- Disseminate the Poplar and Willow Insect e-book, Global Survey of Poplar and Willow Breeding Programmes, Poplar and Willow Book, other pipeline products through the IPC website, and working papers and formal publications as appropriate.

## **PART II      REPORT OF THE 22<sup>ND</sup> SESSION OF THE INTERNATIONAL POPLAR COMMISSION**

### **I            ORGANIZATION**

1. The 22nd Session of the International Poplar Commission (IPC) was jointly hosted by the Governments of Chile and Argentina, and held in Santiago, Chile, from 29 November to 2 December 2004. The technical agencies hosting the meeting on behalf of their Governments included the Corporación Nacional Forestal (CONAF), Chile; and the Secretaría de Agricultura, Ganadería, Pesca y Alimentos (SAGPyA), Argentina.

2. The Session was attended by 154 delegates and advisers from 29 countries, including 23 member countries of the Commission: Argentina, Belgium, Canada, Chile, China, Croatia, Finland, France, Germany, India, Islamic Republic of Iran, Italy, Korea (Republic of), Morocco, the Netherlands, New Zealand, Romania, Serbia & Montenegro, Spain, Sweden, Turkey, United Kingdom and United States of America. Observers attended from Bosnia & Herzegovina, Brazil, Estonia, Russian Federation, Uruguay and Uzbekistan.

### **II            OPENING OF THE SESSION**

3. The Session was opened by Mr Carlos Weber, Executive Director, Corporación Nacional Forestal (CONAF), as both a host and major client of the IPC. He issued the challenge for the IPC to translate science into practice and to reach wider stakeholders to improve policy, planning and implementation of Poplar and Willow development.

4. Participants were welcomed by Dr Stefano Bisoffi, Chairman of the IPC, who stressed the IPC mandate and the need to translate outputs into development outcomes, to assist FAO in serving their member country needs. Revitalization of Working Parties and mobilization of National Poplar Commissions were highlighted as a focus of this Session.

5. Mr Jim Carle, Secretary of the IPC, in welcoming participants on behalf of the Director-General of FAO, drew attention to the scale, role and social, environmental and economic importance of Poplars and Willows globally. He reaffirmed the role of the IPC as a Statutory Body of FAO and requested participants to explore new initiatives in deriving achievable programmes of work and in making sound recommendations to FAO and Governments that will be directly relevant for sustainable forestry and rural development.

6. Mr Carlos Weber (Chile) was elected as Chairman, and Messrs John Doornbos (Canada) and Alberto Calderón (Argentina) were elected joint Co-chairmen.

7. The Provisional Agenda was adopted without amendment.

### **III            THE CONTRIBUTION OF POPLARS AND WILLOWS TO SUSTAINABLE FORESTRY AND RURAL DEVELOPMENT**

8. The theme of the 22<sup>nd</sup> Session was “The Contribution of Poplars and Willows to Sustainable Forestry and Rural Development”. There were 160 papers submitted for the 22<sup>nd</sup> Session, of which 72 percent were contributed by Argentina (32), Chile (16), China (16), United States of America (14), India (13), Belgium (10), Italy (8) and Canada (6). Developing countries, or those with economies in transition,



contributed 60 percent of the papers. Although many papers were inter-disciplinary, the distribution by principal Working Party was: Poplar and Willow Genetics, Conservation and Improvement (63); Poplar and Willow Production Systems (47); Environmental Applications of Poplars and Willows (16); Poplar and Willow Insects and Other Animal Pests (16); Logging and Utilization of Poplar and Willow Wood (9); and Poplar and Willow Diseases (9).

9. The paper summaries submitted to the 22<sup>nd</sup> Session of the IPC were published in Working Paper, IPC/2 - "The Contribution of Poplars and Willows to Sustainable Forestry and Rural Development. Abstracts of Papers submitted to the 22<sup>nd</sup> Session, International Poplar Commission, 2004". The Working Paper was available on the internet prior to the 22<sup>nd</sup> Session and was distributed to all participants on registration.

10. The 22<sup>nd</sup> Session was the feature of the quarterly SAGPyA Forestal periodical, No 32, September 2004. In addition, it is proposed as the feature of Unasyuva No 221, 2005/2, the quarterly FAO periodical, based upon selected papers submitted to the 22<sup>nd</sup> Session.

11. The following keynote addresses were delivered in the opening plenary in support of the theme:

- Brian J. Stanton – *Benefiting Humankind Through Improved Application of Poplar Research and Technology*
- Jaime B. Ulloa – *An Integrated and Sustainable Production System - Agricultural and Forestry Company El Alamo Ltd*
- Marta I. Ábalos Romero – *Industrialization of the Chilean Basket Willow*
- R.P.S. Katwal – *Contributions of Poplars and Willows to Sustainable Forestry and Rural Development in India*
- John Charles – *Poplar and Willow Development and Use in New Zealand*
- Giuseppe Scarascia Mugnozza - *Environmental Aspects of Biomass Production: The "Poplar Free Air CO<sub>2</sub> Enrichment (POPFACE)" Experiment as a Model to Study the Impact of the Increasing CO<sub>2</sub> on Agroforestry Systems*
- Drusilla Riddell-Black – *The Contribution of Environmental Applications of Poplar and Willow to Rural Development and the Principles of Sustainable Forestry*
- Lawrence B. Smart - *Genetic Improvement of Shrub Willow (Salix) Crops for Bioenergy and Environmental Applications*
- Jos Van Slycken – *Potential Gene Flow Between Cultivated Poplars and Native Black Poplars (Populus nigra L.) in Belgium*
- Sylvie Augustin – *Transgenic Poplar and the Poplar Leaf Beetle : State-of-the-Art on the Risk of Evolution of Insect Resistance*

#### IV SYNTHESIS OF NATIONAL REPORTS ON ACTIVITIES RELATED TO POPLAR AND WILLOW AREAS, PRODUCTION, CONSUMPTION AND THE FUNCTIONING OF NATIONAL POPLAR COMMISSIONS

12. National Reports were received from the Poplar Commissions of 22 member countries and one observer country (Russian Federation) (see Annex V). The contents of the National Reports were synthesized into two IPC Working Papers:

- IPC/3 – “Synthesis of Country Progress Reports, Activities Related to Poplar and Willow Cultivation and Utilization, 2000 through 2003. Prepared for the 22<sup>nd</sup> Session, International Poplar Commission, 2004”;
- IPC/4 – “Publications Listed in Country Progress Reports. Prepared for the 22<sup>nd</sup> Session, International Poplar Commission, 2004”.

13. These Working Papers were available on the internet prior to the 22<sup>nd</sup> Session and distributed to all participants. Additionally, the synthesis was presented as a Keynote Address by the Secretary to the plenary – “Global Synthesis of Poplars and Willows: Highlights, 2 December”.

#### Introduction

14. In 70 temperate and boreal countries of the world, the Poplar and Willow estate exceeds 80 million hectares, often in fragile ecosystems under threat from communities seeking to supplement their meagre livelihoods. The estate includes natural forests, 74 million hectares; planted forests, 5 million hectares; and agroforestry, 2 million hectares. Poplars and Willows are managed to primarily provide environmental functions (rehabilitation of degraded lands, forest landscape restoration, combating desertification, protection of soils and water, conservation of biological diversity, providing shelter and shade and sequestering carbon); however, they also provide in excess of 120 million m<sup>3</sup>/year of wood and fibre for conversion to a wide range of forest products, particularly in developing countries and those with economies in transition. The ownership of the global Poplar and Willow estate is 59 percent public sector, 26 percent private smallholder and 15 percent private corporate and they make a major contribution to poverty alleviation, food security and integrated development in both rural and urban environments.

#### Policy and Legal Framework

15. Most of the IPC member countries, which are also members of the European Union (EU), have reported major changes in European Council regulations which affect poplar plantations:

- The previous decree #2080 of 1992 concerning support for the afforestation of agricultural land came to an end in 2000;
- A new regulation #1257 of 1999 concerning support for rural development came into effect, valid from 2000 to 2006. Certain forestry (including poplar) activities are eligible for support. Belgium, France and Spain reported the adjustment of national policies and the passing of national laws to implement the new regulation;
- A new regulation, #105 of 1999, on the marketing of forest reproductive material, affecting poplars and poplar hybrids but not willows, was implemented by European countries. The three countries above, as well as Finland, Germany and Italy, have reported on this, as did Turkey in the context of national regulation of clonal quality control.

16. Of the ten countries which have recently joined the EU, only Hungary is a member of the IPC. The adjustments that the ten countries will have to make on accession to the EU were discussed at the First

International Conference on the Future of Poplar Culture, held in Rome in 2003 (see Section XIV(a)). Bulgaria reported changes in national policies and laws affecting poplar growing and use to prepare for accession to European standards.

17. Canada reported that the Provinces had jurisdiction for regulations governing forest management on the one hand, and agriculture on the other. There were, however, some provisions which may restrict poplar cultivation. In British Columbia, for example, poplars intensively cultivated in plantations are considered primary agricultural production, with favourable tax treatment, but only up to 12 years of age – which is before the culmination of mean annual increment, especially when grown for saw logs or peelers. Other Provinces do not have policies or fiscal measures to promote poplar planting, but some, such as Ontario, have more favourable treatment for managed forestland which is not necessarily favourable to the growing of poplars. Quebec Province was reported to restrict the planting of tree crops on prime agricultural land. The United Kingdom reported that Government support focused on social, environmental and amenity benefits and that there is no current grant system to support agroforestry.

18. In relation to the removal of land from agriculture under “set-aside” programmes, the Republic of Korea noted that the prohibition of agricultural protection under the Doha Round of the World Trade Organization (WTO) could lead to more land becoming available for poplar plantations.

19. All willow plantations in Sweden are subsidized by the Government, but it was reported that the rules were changing almost every year, which made it difficult for long-term planning by farmers proving an obstacle for the further development of energy forestry. Without subsidies, the Swedish report states that there would be no energy forestry. The United Kingdom reported that policies to encourage greater uptake of renewable energy by the electricity-generating and supply industry were creating an improved market for woodchips from short rotation coppice, currently dominated by willow.

20. Environmental restrictions on the cultivation of poplars have been noted in previous Syntheses. Belgium reported uncertainties for forest owners arising from such actions, following the delineation of the Flemish Ecological Network where nature conservation has absolute priority. Forty-three percent of the Flemish poplar plantations were located within the network and it was unclear whether, in the long term, poplar plantations have to be transformed into forests composed of native species, or even into non-wooded areas, such as flower-rich grasslands. France has translated international engagements into national regulations, notably those concerning sustainable management and the multi-functional character of forests arising from the Ministerial Conference on the Protection of Forests in Europe (MCPFE). The national report noted that this could lead to an important impact on the area of poplar plantations in France, notably where there is conflict for land use between the maize and poplar growers and associations for the protection of the environment.

21. China reported plans to expand wood pulp production significantly, with associated plantations which would include poplar species. Six other tree planting projects for wood production and shelter, which will include poplars and willows, began in 2002; these plantations will accelerate the move of wood supply from natural forests to plantations.

22. Argentina noted that the national economy started to recover from 2003, with positive impact on forestry projects. A World Bank project had recently started, which included technical assistance. The effects of the terrorist attacks in New York in September 2001 had a major impact even on the growing of poplars and willows in the United States of America. The weaker economy led to major federal and state cuts for research and development, and reductions in support from forest industry. On the other hand, lower interest rates led to a surge in house-building with increased demand for poplar-based composite board. There has been too an increase in funding for environmental purposes, reported in Section III, including agroforestry, a forest-based climate-change study and phyto-remediation.

23. The United States of America was the only country to report that most companies growing poplar in block plantations were participating in the Forest Stewardship Council (FSC) certification programme in order to “remain competitive and to be more environmentally conscious”.

#### Natural Forests and Other Wooded Land

24. The total reported area of natural poplars is about 80 million ha, 97 percent of which occur in Canada (28.3 million ha at 2001 base year), the Russian Federation (21.9 million ha) and the United States of America (17.7 million ha at 2003 base year). These three countries report that the main purpose of these natural forests is wood production. China, which has the fourth largest area of naturally occurring poplars (2.1 million ha), reports that the main purpose of management of these forests is environmental, as do the next five countries in terms of naturally occurring poplars: Germany (100 000 ha), Finland (67 000 ha), France (39 800 ha), India (10 000 ha) and Italy (7 200 ha). It was, however, noted that these reported area figures have greatly increased in two countries since they reported to the 21<sup>st</sup> Session of the IPC due to new survey figures. Canada, for example, then reported 17.8 million ha, based on 1991 figures, while the United States of America reported 8.75 million ha – plus large areas growing outside the surveyed forest area. China reported about 3 million ha in 2000. The greatest diversity of natural Poplar species was reported in the Russian Federation (8 species), India (5), Italy (5) and the Republic of Korea (5).

25. Most of the 3.2 million ha of naturally occurring willow was reported from the Russian Federation (2.9 million ha), followed by France (66 600 ha), China (60 000 ha), Italy (35 100 ha) and Croatia (6 700 ha). Several other countries reported that natural willow occurred, usually in mixture, but was not included in national inventories, e.g. Canada, Chile. In the last-mentioned, it is an important resource for domestic and artisanal use in rural areas. The greatest diversity of natural Willow species was reported in India (15 species), Russian Federation (14) and France (10).

26. The global reported area of planted poplar was 6.7 million ha, of which 3.8 million ha (56%) were planted primarily for wood production and 2.9 million ha for environmental purposes. Thirty percent of the total reported area of plantation was established in agroforestry systems, and 40 percent of the global wood production area was from agroforestry systems.

#### Plantation Forests and Trees Outside Forests, including Agroforestry

27. China reported most planted poplar overall (4.9 million ha, or 73 percent of the global total) and in both categories – plantations for wood production comprised 53 percent of the global wood production total and nearly all of the environmental, while making up 49 percent of the plantations established in agroforestry systems. India reported also 49 percent of the total of agroforestry plantations, and with 1 million ha contributed the second largest area of poplar plantations. In 2000, India reported approximately 40 000 ha, and 26 400 ha in 1996. Other countries which reported significant areas of planted poplar included France with 236 000 ha (253 700 ha in 1998 and 245 000 ha in 1993), Turkey with 130 000 ha (145 000 ha in 2000, 157 000 ha in 1996), and Italy with 118 800 ha (118 800 ha in 2000). Argentina reported 63 500 ha of poplar plantations, while Chile reported 15 000 ha.

28. The global area of planted willows was 176 000 ha, of which 90 000 ha were for wood production (51%) and the balance for environmental purposes. Few countries established willows in agroforestry systems, except for New Zealand. Most of the planted willows is in China, 80 000 ha, followed by Argentina, 46 000 ha, New Zealand, 20 100 ha, and Sweden, 15 100 ha. Argentina has the largest area of production plantations of willows, 46 000 ha, followed by China, 21 000 ha, and Sweden, 15 000 ha (for renewable energy). Romania submitted a report in 2003 to the First International Conference on the Future of Poplar Culture (Italy) in which it reported 24 200 ha of planted willows. China has the largest area of

willows planted for environmental purposes (59 000 ha), planted as an anti-desertification measure, followed by New Zealand, 20 000 ha for river bank stabilization.

### Production Trends

29. Reported annual removals of poplar from natural stands were significant in only the Russian Federation (100 million m<sup>3</sup>) and Canada (16 million m<sup>3</sup>). Only the Russian Federation reported significant annual removals of willow from natural stands, of 15 million m<sup>3</sup>.

30. Five countries reported annual removals of more than 1 million m<sup>3</sup> of poplar from planted forests - Turkey (3.8 million m<sup>3</sup>), China (1.85 million m<sup>3</sup>), France (1.8 million m<sup>3</sup>), Italy (1.4 million m<sup>3</sup>), and India (1.2 million m<sup>3</sup>). All of the outturn of India came from agroforestry systems. Agroforestry production was also significant in Italy (0.5 million m<sup>3</sup>), and China (0.2 million m<sup>3</sup>). Argentina reported annual removals of willow from planted forests of 340 000 m<sup>3</sup>, and Bulgaria 311 000 m<sup>3</sup>.

### Area Trends

31. Increases in natural poplar associations were reported for China, the Russian Federation and Croatia. Decreases were reported in Belgium, Bulgaria, Germany, Serbia & Montenegro, and the United States of America. Increases in natural willow associations were reported for China, Croatia and Spain. Decreases were reported in Bulgaria, Germany, the Russian Federation, and Serbia & Montenegro.

32. Increases in planted poplars were reported for Argentina, Canada, China, Finland, France, Italy, Spain, the United Kingdom, and the United States of America. Decreases were reported for Belgium, Croatia, Germany, the Russian Federation, and Turkey. Increases in planted willows were reported for Argentina, Belgium, China, Sweden and the United Kingdom. Decreases were reported for Bulgaria, Croatia, Germany, the Russian Federation, and Spain.

33. Areas of poplars in agroforestry/trees outside forests increased in Bulgaria, Canada, China, Germany, Serbia & Montenegro, Spain, and the United States of America. Decreases were reported in Belgium and Turkey only. Areas of willows in agroforestry/trees outside forests increased in Bulgaria, China, and the United States of America, and decreased in Belgium and Germany only.

### Main Forest Products

34. The main forest products derived from primarily poplars, in order of economic importance, were ranked (priorities 1 to 8) for each country. The results included:

- Pulp, paper and cardboard were the most favoured end use in Europe (Belgium, Finland, Serbia & Montenegro [1]; Bulgaria, Croatia, France, Germany, Italy [2]; and Spain and the United Kingdom [3]), North America (Canada and the United States of America [1]); China [1] and Argentina [1].
- Packaging (pallets, boxes and crates) was also a favoured end use in Europe (Bulgaria, France and the United Kingdom [1]; Belgium, Serbia & Montenegro and Spain [2]; and Croatia, Finland, Germany [3]), Republic of Korea and the Russian Federation [2]; and Canada, China and India [3].
- Reconstituted wood panels were the favoured end use in Germany [1]; Argentina, Canada and the United States of America [2]; and Bulgaria and Italy [3].
- Plywood was the favoured end use in India, Italy and Spain [1]; China and Turkey [2]; and France, Serbia & Montenegro and the United States of America [3].

- End use for matches was favoured in Chile and the Russian Federation [1]; India [2] and the Republic of Korea and Sweden [3].
- Furniture manufacturing was generally ranked as a lower priority by most countries, however of economic importance in Belgium and Chile [3].
- Fuelwood or production of biomass for energy was generally ranked as a lower priority by most countries, however of economic importance in Sweden and the United Kingdom [2] and Turkey [3].
- "Other" end uses for lumber and general construction were reported as priorities in Turkey [1]; Finland [2] and Argentina [3]; handicrafts and wicker work in Chile [2] and the Russian Federation [3]. The Republic of Korea, Serbia & Montenegro and Sweden [1] highlighted that their principal purpose for their poplar and willow resources was for environmental or conservation purposes, thus providing valuable services rather than forest products.

### Main Cultivars in Use

35. Cultivars were ranked from the most planted to the least planted without indication of the proportion of the current national planting programme, or of the existing area, established to each cultivar so it is not possible to give a true estimate of the importance of each cultivar in terms of present use. The most planted cultivars of poplars and willows reported include:

- *Populus euramericana* cultivars in many countries; however, in China, the Republic of Korea and Turkey, they are the main cultivars planted.
- I-214 cultivar in several European countries.
- *Populus deltoides* cultivars in Argentina, India and Serbia & Montenegro.
- *Salix matsudana* hybrids and the unhybridized species in China and New Zealand.
- *Salix babylonica* with *S. alba* in Argentina.

### Ownership

36. The percentage by ownership of the four countries with the greatest areas of poplar natural forest is detailed in the table below:

	Production %			Environmental %		
	Public	Corporate Private	Small- holder	Public	Corporate Private	Small- holder
Canada	80	n.a.	n.a.	n.a.	n.a.	n.a.
Russian Federation	95	5		95	5	
USA	37	6	57	50	25	25
China	53	28	19	91	5	4

37. The poplar natural forest resource managed for environmental purposes in these countries, and others reported, is generally in public ownership, while the picture is less clear for the natural poplars grown for wood production. The largest reported willow natural forest areas are in the Russian Federation, which are primarily in public ownership. In France the natural willow forests are in private ownership, divided between small and corporate owners.

38. The percentage by ownership for poplar plantations for wood production purposes of the five countries with the largest areas of poplar plantation are shown in the table below:

	Plantation			Agroforestry		
	Public	Corporate Private	Small- holders	Public	Corporate Private	Small- holders
<b>China</b>	57	34	9	51	38	11
<b>India</b>						100
<b>France</b>	1	99				
<b>Turkey</b>			100			
<b>Italy</b>	10.7		89.3			

39. The five countries do not show any linkage between ownership and the type of economy – free market, or centrally planned - although there appears to be a trend towards ownership by small holders.

40. The table below shows markedly contrasting ownership of planted willows for production or environmental purposes in the four main countries by percentage.

	Plantation			Agroforestry		
	Public	Corporate	Small- holders	Public	Corporate	Small- holders
<b>China</b>						
Production	50	12	38	88	3	9
Environment	88	3	9	100	-	-
<b>Argentina</b>						
Production		70	30			
<b>New Zealand</b>						
Environment						100
<b>Sweden</b>						
Production			100			

#### Identification, Registration and Varietal Control

41. Belgium reported the registration of four new clones of *Populus deltoides*, China 20 new varieties, India six new clones, and Serbia & Montenegro registered two, all of the same species. Belgium reported five promising clones of a cross of *P. trichocarpa* x *P. maximowiczii*. Italy provisionally reported 14 new clones – nine for wood production, and five for short rotation energy supply. France reported a new list of 44 registered poplar cultivars. The report from Belgium draws attention to the need to maintain old cultivars, whose performance may be re-evaluated in the future, a position supported by France which stresses that there exists the risk of the disappearance of cultivars now excluded from the list of cultivars registered for commercial use. France refers to the reference collection of poplar cultivars in Germany, used for testing of new clones, with which France is collaborating. The United States of America drew attention to the most up-to-date overview of the genus *Populus*, its taxonomy, and the characteristics of commercial poplar clones and cultivars in the book *Poplar Culture in North America* by D.I. Dickmann *et al.* (2001). The most up-to-date overview of willow taxonomy and clones planted in the United States was given by Kopp *et al.* (2001).

## Cultivation

42. Few developments in nursery practices or propagation techniques have been reported, although Italy reported on improvements to reduce the cost of chemical application. Details of bio-technology are included in “Selection and Breeding” (below).

43. Many countries included details of existing techniques for the establishment of planted forests but few new developments were reported. Argentina reported several new and on-going experiments on cultivation. China reported new cultivation techniques for pulpwood plantations. Croatia reported that most land now available for block plantations is land marginal for agricultural production. France described an experiment on the stability of poplar stands related to cultivar and site conditions, following the devastating storm of 1999; the results could offer an explanation of the different performance of cultivars under the effects of wind. Italy reported on the conclusions of growth and yield studies initiated in the early 1990s on three clones in five sites. Italy also reported a trend towards wider planting distances. Herbicides are in general use in many developed economies. For example, Canada established an Herbicide Working Group to expand the range of available herbicides for use in short-rotation-intensive culture hybrid poplar plantations. Turkey initiated studies on the economics of block plantations. The United States of America reported a return to fundamental principles of matching clone to site. “The major changes that are occurring include the realization by industry that the poplar material must be adapted to the area to be planted. In the past there was a belief by many that certain poplar and willow clones could be grown universally. As a result there has been a reemphasis on regional testing of new clonal material in the different regions”. The United States of America also reported a trend toward widespread plantations to develop large piece size for solid wood products, which have higher value.

44. Natural forest management was reported by some countries. Bulgaria reported on the management of the riparian forests of several islands in the river Danube, differentiated into natural parks and reserve zones, while there was also substantial interest in flood plain forests. China reported measures to save the remaining areas of *Populus euphratica*. Croatia reported that management was practised in areas of natural forest which, as in several other countries, were often mixed with other species. Egypt reported that *Populus euphratica* grew naturally in newly reclaimed lands which suffer from salinity, where the produce is used for local consumption as fuel wood. Turkey described natural forests of about 7 000 ha mainly of *Populus tremula*. Some natural stands of *Populus euphratica* occurred in South and South-east Anatolia.

45. Mostly positive experience was reported in agroforestry and the growing of trees outside forests. Argentina and Bulgaria reported on extension activities. Egypt, in reporting on its long-standing linear plantations of *Populus nigra*, *P. alba*, *P. euramericana*, also stated that some owners have begun to plant poplars on farms. In India, however, where there has been for some time an agro-forestry programme of over 30 000 ha in certain States to supply veneers for matches and plywood, it was reported that prices were falling, leading to a reduction in the numbers of poplars planted in 2003. New Zealand reported work to encourage the use of poplar and willows for fodder. Guidelines have been developed for the management of trees for forage production and other related topics. The United States of America reported that there has been a surge in the importance given to agroforestry. At least six major agroforestry centres that plant poplars and willows were operating, with the goal of promoting good stewardship of the land and along streams. There has been too an increase in funding for agroforestry schemes to plant trees along streams and rivers to prevent soil erosion, agricultural chemical runoff, enhance wildlife habitat and provide bio-energy and wood products for the rural economy. This funding is aimed at improving an impending crisis of hypoxia in the northern Gulf of Mexico created from runoff from Midwestern agricultural regions.



## Selection and breeding

46. Several countries reported work on gene-mapping. Among others, Belgium reported that a genetic map had been prepared for a cross of *Populus trichocarpa* x *P. deltoides*, while AFLP (Amplified Fragment Length Polymorphism) maps had been constructed for *P. deltoides*, *P. nigra* and *P. trichocarpa*. These pedigrees, the report stated, “offer a resource of large significance for mapping and marker-assisted selection.” China reported on a genetic linkage map and QTL (Quantitative Trait Loci), genetic engineering to include various genes conferring resistance to insect attack and diseases. Two academic research groups in Canada were reported to be involved in studying *Populus* (and *Picea*) genomics. Their purpose was to understand the function of genes that control forest health and wood formation in forest trees. Both groups drew on a wide range of national and international collaborators and partners<sup>1</sup>. France reported on-going work under the programme POPYOMICS, specifically in relation to tree breeding of *Populus deltoides* for resistance to *Melampsora larici-populina* but also for the better management of genetic diversity. In addition, a great deal of research is being done into biotechnologies related to the metabolism of lignins, studies on the formation of wood, such as the identification of genes involved in the formation of tension wood, etc. Germany reported studies on transgenic aspen clones. The Republic of Korea reported work on gene sequencing and genetic transformation. Spain analyzed the diversity of *Populus nigra* populations in the Ebro river basin using molecular markers. The United States of America reported that there has been a dramatic increase in research funding for poplar genomics and as a result the International Populus Genome Consortium announced that the genome of a *Populus trichocarpa* pedigree had been sequenced and that quaking aspen *Populus tremuloides* was nearly completed.

47. Egypt reported that *Salix viminalis*, *S. papyronica* and *S. tetrasperma* were being investigated for genetic polymorphism, in addition to external morphology and description. The United Kingdom reported that an important five-year project had recently started to improve poplar and willow short-rotation coppice through breeding and genomics.

48. Most interest in the Aigeiros Section (*P. deltoides*, *P. nigra*, *P. euramericana*) is on *Populus nigra*, where many European countries reported their activities under the European Forest Genetic Resources Programme (EUFORGEN) programme of the International Plant Genetic Resources Institute (IPGRI) and the EU-funded EUROPOP (which concluded in 2001). Continuing conservation *ex situ* was reported from several countries – Belgium, Croatia, France and Serbia & Montenegro, while *in situ* conservation was reported by France and Serbia & Montenegro. Recent collections have been made by Croatia on the Sava, Drava and Mura rivers while in the Danube river basin selection will begin since this terrain is partly inaccessible although it represents the most valuable marshland forests region of European black poplar. Spain completed the investigation of natural populations of *P. nigra* in the mid-Ebro valley. Turkey discovered new natural populations of *P. nigra* in Anatolia; work will continue into the natural distribution in Anatolia. Belgium reported research on the effects of exotic poplar plantations on native black poplar. New Zealand reported selections which have been made from crosses between species in the Aigeiros and Tacamahaca sections.

49. In the Leuce Section most reports concerned work on *Populus alba*. India carried out natural variation studies on *P. alba*. Spain reported on-going work (with the Center for International Forestry Research (CIFOR)) which has recently concentrated on a study of its genetic diversity using molecular markers and on salt tolerance of different populations in various hydro-geographic areas. In Turkey, another study was started in 2004 to determine *Populus alba* clones which were resistant to extreme site conditions and selection of *Populus alba* individuals was started throughout Turkey. Italy reported extensive work on *P. alba* as a model species for the application of various techniques based on

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<sup>1</sup> It was subsequently reported that the poplar genome had been mapped – see the following website: <http://www.sciencedaily.com/releases/2004/09/040922073048.htm>.

recombinant DNA, along six main lines of work. The Republic of Korea reported that intensive research had continued on *P. davidiana*, and Finland reported that 17 field trials of aspen (*P. tremula*) and hybrid aspen (*P. tremula* x *P. tremuloides*) were established in the period 1998 – 2002, to compare 55 hybrid aspen and five aspen clones at different sites for growth characteristics, resistance and wood quality.

50. Within the Tacamahaca Section (e.g. *P. ciliata*, *P. trichocarpa*), China reported crosses of *P. deltooides* with *P. cathayana*. The only other report in this section was from India, where natural populations of *P. ciliata* have been screened for trees resistant to *Melampsora*.

51. In addition, China reported crosses of *P. euphratica* with *P. simonii* and *P. euphratica* with *P. nigra*.

52. Argentina reported that a willow improvement programme had re-started, while China reported on its ongoing breeding programme. In Belgium the emphasis in the willow breeding programme was on indigenous tree-forming willows, namely *Salix alba* (White willow), *S. fragilis* (Crack willow) and their hybrids *S. x rubens* and *S. x rubens* var. *basfordiana*. Research was conducted into resistance to *Brenneria salicis* (Watermark disease), inter- and intra-specific crossings, and use and technology of willow wood. Chile reported the evaluation of species and cultivars of tree-forming willows for artisanal use, principally sub-genera *Vetrix* and *Salix*, obtained from local populations and imported clones and cultivars. Croatia reported that selection of arborescent willows had been carried out in the natural populations, and that work was done on intra species hybridization. *Salix matsudana* was used as the partner to the inter-species hybridization of the autochthonous white willow. In New Zealand the willow breeding programme continued, largely to improve willow resistance/tolerance to the sawfly, *Nematus oligospilus*. Seedlots of *S. lucida* var. *lasiandra* were collected in northern California and southern Oregon (USA) in 2000, for evaluation of sawfly resistance and performance in New Zealand conditions. In Sweden the collection of *Salix* species and clones, which started 30 years ago, continued, but now by a private company.

### Diseases

53. Many national reports describe progress – or sometimes lack of progress – in controlling the poplar rust *Melampsora larici-populina*. Belgium has continued major study on the importance and distribution of poplar rust in the Walloon Region from 1999 to 2003 and characterization of the *Melampsora larici-populina* races. The results confirm the diversity and the continuing evolution of the *Melampsora larici-populina* rusts. The analyses also discovered new virulent types. Studies continued on breeding and selection of poplars for resistance to *M. larici-populina*. Canada reported, in Quebec Province, the first recorded occurrence of *Melampsora larici-populina* in a nursery. Croatia reported that since the disease occurred in the latter part of the growing season, it did not represent a significant danger. France reported that the period has been characterized by the systematic development of important attacks of poplar rust, which has led to a reduction or halt in the use of susceptible cultivars. Research had continued into the recognition of pathogens to the rust, and resistance of species and cultivars of poplar to the rust, among others. India reported the disease on *P. ciliata*, and noted the most and least susceptible clones. Italy, which presented data relevant to the climatic variation and moisture stress from 2000-03, reported that the situation had remained the same as in the previous period. Serbia & Montenegro reported that 2001 and 2004 were very favourable for the spread of leaf diseases in general.

54. *Marssonina brunnea* is another foliar disease figuring in national reports. France reported clonal tests for resistance, Italy noted low levels of infection in 2001 and 2003, while Serbia & Montenegro, Spain and the United States of America reported attacks. Croatia and Serbia & Montenegro reported significant damage from bacterial cancer, *Xanthomonas populi*, while France reported the evaluation and selection of material for resistance. Argentina reported on the importance of attack from *Septoria musiva* stem canker, and Canada reported that disease had been spreading into areas where it was previously not

present, but the United States of America stated that native cottonwoods are for the most part resistant to *Septoria*, thus providing opportunities for breeding for resistant hybrids.

### Insects and Other Pests

55. Argentina reported that *Platypus sulcatus* caused significant damage to poplars and that work to find control methods was continuing while Italy reported that a potential threat to poplar cultivation was represented by the recent introduction to a restricted area of central Italy of *Platypus mutatus*. Chile reported that the main damage to poplars was caused by *Tremex fuscicornis*, which affects weakened trees. France reported continued and spreading massive attacks of *Phloeomyzus passerinii*, but noted that different cultivars showed varying susceptibility to attack. India reported that the poplar defoliator, *Clostera cupreata*, was considered the most damaging pest of poplar; it had inflicted large scale defoliation especially to *Populus deltoides* which had been planted in large areas in three of the main poplar-growing Provinces. Italy reported that 30 percent of the total national cost of poplar phytosanitary protection had been spent on the control of the borer *Cryptorhynchus lapathi*. Serbia & Montenegro reported that there had been large scale attacks of gypsy moth, *Porthentria dispar*, in 2000, 2001, 2003 and 2004. Spain mentioned continuing, but controlled, attacks of *Paranthrene tabaniformis*, as did Italy.

56. Regarding willows, Belgium has continued studies on the watermark disease of willows in agricultural areas. Chile reported serious damage by *Nematus desantini* which could cause death. New Zealand reported that the Willow sawfly (*Nematus oligospilus*), a sawfly that feeds exclusively on willows, had spread since its arrival in 1997 throughout the country, causing extensive defoliation to willows on the East Coast of the North Island. Together with the local government, an integrated research and management programme had been designed, covering the definition of the impact; understanding the insect; developing resistant willows; and remedies. Sweden summarized its experience by stating that the effects of insects were so far relatively small, but populations of various insects could be expected to build up, now that the number and size of willow plantations had increased. Sweden reported that “intensively managed willow plantation is a benevolent catering system of tasty, never-ending free meal for ... moose” but that geese may help to control weeds in willow plantations, where they eat the weeds but not the trees.

### Abiotic Damage

57. Bulgaria reported that over the last few years there had been an increase in long-term droughts together with dry winds. France reported several studies on resistance to drought. The United States of America summarized the situation: “Given the current scenarios of concomitantly increasing levels of atmospheric CO<sub>2</sub> and ozone coupled to more variable and extreme weather in the next century, damage to poplars and willows by insects and pathogenic fungi is likely to escalate substantially in the future”. Croatia stated that the price of poplar wood in many places had been reduced due to the presence of shrapnel in the wood.

### Logging and utilization

58. Croatia reported “There is more utilization rationalization ... today in the organization than in technical innovation of equipment”. Many countries reported work on timber testing for studies on wood properties, paper and pulp quality, e.g. France, Serbia & Montenegro. Belgium, in addition to these standard tests, investigated also the influence of elevated CO<sub>2</sub> on wood properties. Italy reported work on multi-laminar wood (MLW) with poplar and eucalyptus. The United States of America reported that although poplar was still used extensively for non-stress graded lumber for a broad range of applications, there was a trend towards growing poplars for solid wood products because of the higher market value for those products. Research into the use of wood for bio-energy had attracted attention. France is participating in

the European project FOREENERGY, which had the aim of adapting to southern European conditions two Finnish techniques for the collection of wood for energy purposes. Belgium continued work on biomass for energy and carbon sequestration but noted that yield and carbon uptake might be far less than the values reported for high quality sites and under favourable conditions. A lot of sites that would be available for biomass production would be of marginal quality, jeopardizing the expected benefits. Likewise, Germany noted that short rotation areas could not compete financially with agricultural food production, although the case was different for set-aside areas due to government funding. However, production shortfall or volume yield reductions of only 20 percent could lead to losses. Italy continued work in several sites on poplar as a carbon sink, and noted that soil working negatively affects the capacity of the site to absorb carbon.

59. Sweden, which remained positive about the use of biomass plantations, noted that 20 percent of all energy used in Sweden came from biomass and that well-developed district heating systems were established in most cities and towns. The United Kingdom reported that some interest was being shown by power companies in short rotation forestry, in preference to short rotation coppice, because of the lower bark ratio in the former, which gave a cleaner burn when co-fired with pulverised coal. Poplar was a potential candidate for this market.

60. Basket-making continued to be an important use for willows in Chile while Argentina reported on the establishment of “Operation Salix” which had the aim of valorizing willows as a forest resource. Finland reported that willows were studied in a project “Herbal medicine production: breeding and cultivation of Salicaceae species as raw material for herbal product industry.” This project included the study of willow clones to biotic and abiotic (climate change, UV radiation) stress.

#### Environmental uses

61. Several countries reported on new knowledge, technologies and techniques for the cultivation of poplars and willows for environmental uses. The United States of America report summed up the overall situation in several countries, in stating that there had been an increased public awareness of environmental policy issues such as air and water pollution, global climate change, soil erosion and carbon sequestration. In the United States of America, this awareness had resulted in hundreds of small poplar plantations for riparian buffers, wastewater treatment and re-use, phytoremediation, and some carbon sequestration. China reported on the extensive use of poplars for shelterbelts and sand dune stabilization. The United Kingdom reported the use of poplar to provide shelter and ground cover for free-range chickens; the produce was sold as “Woodland eggs”.

62. In terms of site and landscape improvement, including forestry for climate amelioration, Canada reported that a programme had been initiated (Forest 2020) to establish a demonstration network of fast-growing plantations, of which poplar was a major component, to establish plantations on previously non-forested lands (primarily agricultural lands) as a method of carbon storage. Within the context of the recently-ratified Kyoto Protocol, one company that manages a large-scale short-rotation hybrid poplar plantation crop in Alberta has recently secured a contract with Environment Canada to sell its “*verified GHG emission reductions*” from plantations established between 2004 and 2007 which may be a precursor to the carbon trading that will take effect in 2008. Furthermore, the Montreal Botanical Garden has been active in research of *Salix* (willow) species in short rotation coppice management and *Salix viminalis* achieved a biomass production of a little more than 70 tonnes of dry matter per hectare at the end of the second three-year cycle on fertilized plots - the highest woody biomass production ever reported in Canada. France reported studies on the effects on the soil of short and very short rotations.

63. Bulgaria reported willow planting on the Danube for river bank stabilization. Chile reported a programme of extension for tree planting on river banks, both to stabilize them and to reduce sedimentation.

64. Actual or potential applications of poplar and willow planting for phyto-remediation have been mentioned in several national reports, including Italy. Chile reported that laboratory studies had been started on willows in relation to the absorption of heavy metals. New Zealand reported the creation of poplar clones that accumulate high concentrations of boron, a common contaminant in timber industry sites which have been used commercially for the remediation of a five-hectare wood-waste dump. Serbia & Montenegro reported field work on phyto-remediation using poplar for cadmium phyto-extraction. Sweden reported that some willow species and clones have a high potential for taking up heavy metals from the soil. Experiments were proceeding or were planned to try to purify polluted soils by growing willow on them. The biomass would be harvested and burnt, where the heavy metals could be captured in the smoke, in the fly ash and in the bottom ash.

65. The potential of poplars and willows to absorb nitrogen arising from intensive livestock farming has been reported by several countries. The Republic of Korea reported research into the planting of poplars and willows on landfill sites, and into irrigation with livestock waste water. A project in New Zealand investigated the efficacy of using poplars and willows in a self-renewing, coppicing system to reduce the amount of nitrate leaching from dairy shed effluent that was normally applied to pasture. Serbia & Montenegro reported laboratory work on the effects of different concentrations of nitrate on growth of poplar cuttings. Sweden reported that research had shown that one hectare of willow plantation could take up 150-200 kg nitrogen per year.

#### Administration and operation of the National Poplar Commissions

66. Most countries reported that their national poplar commissions continued to function and to organize meetings. Bulgaria reported the appointment of new members of the National Poplar and Willow Commission, China on the re-election of its National Poplar Commission, while Italy reported a revision of the Statute governing the National Poplar Commission to reduce i.a. the number of members. Only New Zealand and Serbia & Montenegro reported that they had no national commission, although they had made other arrangements for national representation. Several countries reported regular or irregular meetings organized by their National Poplar Commission – examples include Belgium, Canada, China, France, Italy, Republic of Korea, New Zealand, Spain, Turkey, United Kingdom, and the United States of America.

#### Literature

67. The Working Paper IPC/4, “Publications Listed in Country Progress Reports. Prepared for the 22<sup>nd</sup> Session, International Poplar Commission, 2004”, contained the massive amount of documentation since 2000. One publication, in particular, which was produced on the occasion of the 21<sup>st</sup> Session of the IPC, jointly hosted by Canada and the United States of America, in Portland, Oregon in September 2000, namely *Poplar Culture in North America*, by Dickmann, Isebrands, Eckenwalder and Richardson (National Research Press, Ottawa, 2001). Revision of the classic *Poplars and Willows*, which was published in 1979 by FAO under the auspices of the IPC had been initiated.

#### Relations with other countries

68. Nearly all national reports included details of the strong relationships that had been maintained between members of the IPC, including joint meetings, reflecting its important “networking” function. There were too many to be individually listed. Italy organized the First International Conference on the Future of Poplar Culture, hosted by the Italian National Poplar Commission with the Italian Ministry of Foreign

Affairs and the Ministry of Agricultural and Forest Policies. The meeting, in collaboration with FAO and attended by 176 participants from IPC member and non-member countries, was held at the headquarters of FAO, from 13 to 15 November 2003 in Rome, Italy. The Conference aimed to:

- Inform decision-makers at the European and international level about the role that poplars and willows can play in social and economic development, and other functions.
- Discuss the implications of integration of the forest sectors of the European Union (EU), candidate countries to the EU, and the broader Pan-Europe region for the forestry sector and poplar culture.
- Outline the role of the International Poplar Commission (IPC) in providing a network to facilitate transfer of technology.

69. The conference participants concluded that poplars and willows had an exciting future, within an expanded European Union, for its economic, social and environmental benefits. Full details were published in a report and may also be found at the following address:

<http://www.fao.org/forestry/foris/webview/forestry2/index.jsp?siteId=5441&langId=1>

## V NOMENCLATURE AND REGISTRATION

70. The Sub-committee remained the International Cultivar Registration Authority (ICRA) for the genus *Populus*. As such the IPC maintained the Register. This entailed collection of information on new cultivars and checking congruence with nomenclature rules. The Register had been maintained by the Breeding and Selection Department, ISP-Casale Monferrato, Italy in close collaboration with the Working Party on Genetics, Conservation and Improvement. The Chairperson was Stefano Bisoffi.

71. The aims of the Register were to:

- Promote uniformity, accuracy and stability in the naming of cultivars;
- Avoid possible sources of ambiguity in communications and records; and
- Seek consensus among users.

72. The current version of the Register was available at the IPC Web site [www.fao.org/forestry/site/ipc](http://www.fao.org/forestry/site/ipc).

73. Achievements from 2000-2004 included:

- Formal recognition of the IPC as the ICRA for genus *Populus* and the *pro-tempore* Chairman of the Sub-committee was recognized as the Registrar;
- Activities of the Sub-committee were advised to National Poplar Commissions, Officers of the Working Parties, members of the Executive Committee, Professional Organizations and Research Institutes;
- A network of contact persons was established in 34 countries;
- Existing records were reviewed and enlarged to include Belgian, Chinese and Iranian cultivars;
- Preliminary contacts were made with Swedish Willow specialists to explore the possibility of establishing the IPC as ICRA for the genus *Salix*.

74. The results of a SWOT analysis (Strengths, weaknesses, opportunities and threats) of the current situation included:

<b>Strengths</b> <ul style="list-style-type: none"> <li>• IPC as formal ICRA by ISHS;</li> <li>• Excellent preparatory work; and</li> <li>• ISP-Casale Monferrato maintenance of Register</li> </ul>	<b>Weaknesses</b> <ul style="list-style-type: none"> <li>• Lack of awareness by NPCs and breeders;</li> <li>• Lack of dedicated structure; and</li> <li>• Dissemination of information.</li> </ul>
<b>Opportunities</b> <ul style="list-style-type: none"> <li>• Increased visibility of IPC beyond the Poplar World; and</li> <li>• Launch a register for <i>Salix</i>.</li> </ul>	<b>Threats</b> <ul style="list-style-type: none"> <li>• Loss of control of cultivar denomination process.</li> </ul>
<b>Lessons Learned</b> <ul style="list-style-type: none"> <li>• Awareness-raising through NPCs not effective;</li> <li>• Laborious “detective” actions needed.</li> </ul>	<b>The way forward</b> <ul style="list-style-type: none"> <li>• Establish network of contact persons in each country; and</li> <li>• Use gene conservation funding to hire dedicated staff.</li> </ul>

75. The agreed programme of work 2005-2008 included:

- Database and living gene bank of registered cultivars on line to network with IPC member countries, by September 2006 - Responsibility of Stefano Bisoffi, Brian Stanton and Sarah Hurst;
- Standard portfolio of pictures of registered cultivars on line, linked to the Register, to assist in identification of poplar cultivars, by September 2008 - Responsibility of Stefano Bisoffi, Sven de Vries and Martin Weih;
- Feasibility study to explore the opportunities, constraints and resources to establish a Register for the genus *Salix* and possibility of IPC to become ICRA for *Salix*, by September 2006 - Responsibility of Stefano Bisoffi; and
- Assist in maintenance and update of the IPC website, particularly on matters relating to the Subcommittee, 2004-2008 - Responsibility of Gaetano Castro (ISP-Italy) and Magnus Grylle (FAO).

Dr Stefano Bisoffi (Italy) was re-elected as the Chair for the 2004-2008 period.

## VI CONCURRENT AND JOINT MEETINGS OF THE WORKING PARTIES

76. Concurrent and joint meetings of all the Working Parties were held with the following themes. The detailed programme was in Annex II (b) and the authors and titles of papers presented were in Annex IV.

Concurrent meeting themes and sub-themes (where appropriate):

### Poplar and Willow Genetics, Conservation and Improvement

- Biodiversity Conservation and Improvement
- Breeding of Poplars and Willows
- Molecular Genetics and Biotechnologies
- Clonal Selection and Identification

### Poplar and Willow Production Systems

- Cultural Practices and Stand Management
- Short Rotation Production of Biomass for Energy and Fibre
- Environmental Quality
- Rural Economy

#### Environmental Applications of Poplars and Willows

- Decontamination of Polluted Soils
- Treatment of Waters/Production of Biomass
- Landscape Improvement and Carbon Sinks

#### Poplar and Willow Protection

- Insect Pests of Poplars and Willows
- Diseases of Poplars and Willows

#### Harvesting and Utilization

### VII POPLAR AND WILLOW PROTECTION

#### a) Report of the Working Party on Poplar and Willow Diseases

77. The Working Party held one technical meeting during which four scientific/technical papers were presented and discussed and several posters of Poplar and Willow disease threats and impacts were displayed and discussed in the poster sessions.

78. The Working Party aimed to act as a focal point for those seeking information on identifying and managing pathogens on Poplars and Willows. The focus was to disseminate information on diseases and networking with researchers and other users on their management. Specifically close linkages with breeders would be necessary on new pathogens to prepare selection strategies to be adopted in their breeding programmes. Additionally, the Working Party would provide guidance for the import/export of plant genetic material and quarantine.

79. Achievements from 2000-2004 included:

- A survey of Poplar and Willow diseases was conducted through pathologists, breeders and users; the most important diseases and host species were reported for the period 2000-2004 and projected for the period 2004-2008;
- The list of active researchers working on Poplar and Willow diseases was updated.

80. The results of a SWOT analysis of the current situation included:



<p><b>Strengths</b></p> <ul style="list-style-type: none"> <li>• Pathologists: a strongly recognized group; and</li> <li>• Strong knowledge base.</li> </ul>	<p><b>Weaknesses</b></p> <ul style="list-style-type: none"> <li>• Low member activity;</li> <li>• Insufficient networking, particularly in the Southern Hemisphere;</li> <li>• Small number of Poplar and Willow pathologists; and</li> <li>• Low profile of the Working Party.</li> </ul>
<p><b>Opportunities</b></p> <ul style="list-style-type: none"> <li>• Collaboration with IUFRO Division 7 – Rusts of Forest Trees; and</li> <li>• Use of list servers to increase the profile of the Working Party.</li> </ul>	<p><b>Threats</b></p> <ul style="list-style-type: none"> <li>• Reduced funding and fewer pathologists working on Poplar and Willow diseases; and</li> <li>• Declining participation in NPCs in North America.</li> </ul>
<p><b>Lessons Learned</b></p> <ul style="list-style-type: none"> <li>• The Working Party and IPC Profiles are not sufficiently apparent; and</li> <li>• There are advantages of being proactive rather than reactive – prevention through preparedness and prediction.</li> </ul>	<p><b>The way forward</b></p> <ul style="list-style-type: none"> <li>• Merging of Working Parties on insects and diseases to form a “Protection” Working Party;</li> <li>• Closer collaboration with other Working Parties in more “holistic” approaches to management;</li> <li>• Better use of list servers (e.g. Forent and Forpath) and web links to raise the profile of IPC; and</li> <li>• Posting of recent publications and, annotated bibliographies of the IPC website.</li> </ul>

81. The agreed programme of work 2005-2008 included:

- Update the membership list of active researchers on Poplar and Willow diseases and add to the Directory of Poplar and Willow Specialists and the IPC website;
- Prepare a database of Poplar and Willow disease projects and their relevant web links;
- Create a new network such as Forpath to be accessible through the IPC website;
- Routinely post an annotated bibliography of Poplar and Willow disease publications and upload these to the IPC website;
- Establish a chat room to consult pathologists on identification and discuss issues related to diseases;
- Prepare a summary report of the survey of Poplar and Willow diseases and encourage contributors to add more complete information;
- Coordinate the chapter on diseases of the Poplar and Willow book; and
- Strengthen linkages with other Working Parties.

82. The following were elected as officers of the Working Party on Poplar and Willow Diseases for the period 2004-2008:

Ms Marijke Steenackers (Belgium), Chair.  
 Mr Mauritz Ramstedt (Sweden), Vice-Chair.  
 Ms Edilene Buturi Machado (Brazil), Technical Secretary.

b) Report of the Working Party on Poplar and Willow Insect Pests

83. The Working Party held two technical meetings during which eight scientific/technical papers on a range of insect pest threats and impacts were presented and discussed and several posters on these topics displayed and discussed in the poster sessions.

84. The Working Party provided international connectivity between Poplar and Willow researchers and producers because:

- Insects and pest posed a demonstrable threat to Poplar and Willow culture;
- Invasive insects posed an increasing threat to both endemic and exotic Poplars and Willows; and
- Insects and pest posed a threat to production and trade in forest products

85. Achievements from 2000-2004 included:

- Web version of the insect e-book on Insect Pests of Poplar (French version) completed and uploaded to the IPC website;
- Final draft of “The Damaging Insects of Poplars” (English version) completed;
- Registration of the Working Party with ECOPORT (FAO) for insects of Poplars;
- Survey of *Salix* pests conducted through entomologists and National Poplar Commissions; and
- Networking between researchers and producers.

86. The results of a SWOT analysis of the current situation included:

<p><b>Strengths</b></p> <ul style="list-style-type: none"> <li>• Readily identified mission; and</li> <li>• Strongly recognized group.</li> </ul>	<p><b>Weaknesses</b></p> <ul style="list-style-type: none"> <li>• Too many insect species, too few entomologists; and</li> <li>• Limited duration of research contracts.</li> </ul>
<p><b>Opportunities</b></p> <ul style="list-style-type: none"> <li>• Increased collaboration with IUFRO entomologists and pest management teams;</li> <li>• Nominate a Working Party member to report annually on key pests for the year;</li> <li>• Maximize use of the ECOPORT (FAO) portal;</li> <li>• Bi-annual “newsletter” of activities of the working party.</li> </ul>	<p><b>Threats</b></p> <ul style="list-style-type: none"> <li>• Lack of research funding; and</li> <li>• Shortage of taxonomic expertise.</li> </ul>
<p><b>Lessons Learned</b></p> <ul style="list-style-type: none"> <li>• Need for collaboration with entomologists around the world.</li> </ul>	<p><b>The way forward</b></p> <ul style="list-style-type: none"> <li>• Improve networks and communication; and</li> <li>• Identify and integrate common projects (within and between working parties).</li> </ul>

87. The agreed programme of work 2005-2008 included:

- Coordinate and prepare an Insect Pest chapter for the new Poplar and Willow book project, by December 2006 - Responsibility of Sylvie Augustin and John Charles, together with contributing authors;
- Strengthen the Insect Pest Working Party portal on the IPC website, on-going - Responsibility of Sylvie Augustin and John Charles;
- Complete the e-book of Insect Pests of Poplars and Willows (English version) and upload to the IPC website, by December 2005 - Responsibility of Sylvie Augustin and John Charles, in collaboration with FAO web master;
- Update the address book and research area details of Poplar and Willow entomologists around the world, by December 2006 - Responsibility of Sylvie Augustin and John Charles;
- Prepare a bi-annual “newsletter” of research activities and insect news on Poplars and Willows from around the world, by December, 2005 - Responsibility of Sylvie Augustin and John Charles, in collaboration with Poplar and Willow entomologists around the world;
- Prepare annual “country” reports of key Poplar and Willow insect pests, by December 2005 - Responsibility of Jan Volney; and
- Upload all outputs to the Working Party portal on the IPC website.

88. The following were elected as officers of the Working Party on Poplar Insect Pests for the period 2004-2008:

Ms Sylvie Augustin (France), Chair  
Mr John Charles (New Zealand), Vice-chair.

### VIII HARVESTING AND UTILIZATION

89. The Working Party held one technical meeting during which three scientific/technical papers were presented and several harvesting and utilization posters displayed at the poster sessions.

90. The mandate of the Working Party was to facilitate the exchange of scientific and technical information about the harvesting and utilization of Poplars and Willows, particularly through collaborative research programmes.

91. During the period 2000-2004, the Working Party prepared information for the Harvesting and Utilization portal on the IPC website.

92. At the business meeting, it was agreed to change the name of the Working Party from “Logging and Utilization of Poplar and Willow Wood” to “**Harvesting and Utilization of Poplar and Willow Wood**”.

93. The results of a SWOT analysis of the current situation included:

<p><b>Strengths</b></p> <ul style="list-style-type: none"> <li>• Well defined disciplines;</li> <li>• Diversity of products for development; and</li> <li>• Sound expertise/experience of Working Party members.</li> </ul>	<p><b>Weaknesses</b></p> <ul style="list-style-type: none"> <li>• Lack of information and linkages to users of products;</li> <li>• Insufficient interactions with other Working Parties;</li> <li>• Ignorance of products in some important markets; and</li> <li>• Communications with the Working Party not keeping in pace with rapid changes in technology and markets.</li> </ul>
<p><b>Opportunities</b></p> <ul style="list-style-type: none"> <li>• The Harvesting and Utilization Working Party had direct links to the disciplines of the other Working Parties which could be strengthened; and</li> <li>• New innovative opportunities for harvesting and utilization of short rotation Poplars and Willows for a range of end uses and services.</li> </ul>	<p><b>Threats</b></p> <ul style="list-style-type: none"> <li>• Changes in national and international markets that cause fluctuations in supply, demand, specifications and price of forest products;</li> <li>• Environmental covenants on systems of production and harvesting; and</li> <li>• Lack of strong linkages between production related factors and utilization and markets.</li> </ul>

94. The agreed programme of work 2005-2008 included:

- Revitalize the Working Party, with particular focus on serving developing countries, by December 2004 - Responsibility of the Chair, three Vice Chairs, Technical Secretary and the Past-Chair;
- Update the Working Party portal on the IPC website, by April 2005 - Responsibility of Joris Van Acker and the Secretary, IPC;
- Embark on a membership and participant drive for the Working Party through National Poplar Commissions, by April 2005 - Responsibility for coordination, Joris Van Acker;
- Coordinate the Utilization Chapter of the Poplar and Willow book by December 2005 - Responsibility John Balatinecz;

- Liaise with other Working Parties to derive collaborative initiatives (e.g. breeding for desirable wood traits, or use of biotechnology to improve durability), by January 2006 - to be coordinated by Joris Van Acker and Patrick Mertens;
- Conduct a scientific and technical conference on Poplar and Willow Utilization to coincide with the 23<sup>rd</sup> Session, IPC, 2008 - Responsibility of the Working Party Executive;
- Disseminate new scientific and technical information through periodic meetings and posting publications from member countries on the IPC website.

95. In the future the Working Party will strive to address topical issues such as:

- Uses and their geographic distribution around the world;
- Characteristics of wood products to meet industrial uses;
- Definition of the production process of different forest products from different industries;
- Complete a price table of wood products and transport costs and destination country; and
- Issues related to forests products and processes.

96. During the business meeting, participants agreed to the nomination and election of the following individuals as the new executive of the Working Party 2004-2008:

Mr Joris Van Acker (Belgium), Chair  
 Mr Jaime Ulloa (Chile), Vice-Chair  
 Ms Ilona Peszlen (USA), Vice-Chair  
 Mr Shengzuo Fang (China), Vice-Chair  
 Mr Patrick Mertens (Belgium), Technical Secretary

## IX GENETICS, CONSERVATION AND IMPROVEMENT

97. The Working Party held four technical meetings during which 16 scientific/technical papers were presented and a wide range of posters on genetics, conservation and improvement displayed and discussed at the poster sessions.

98. The mandate of the Working Party is to:

- Assist the IPC and its Executive Committee in all matters that relate to genetic aspects of Poplars and Willows;
- Promote contacts worldwide among scientists and experts working in Poplar and Willow genetics with a view to encouraging and facilitating the exchange of information or research programme results;
- Coordinate international research and technological development programmes in the field of genetic resources;
- Provide a forum for the discussion of matters that relate to the exploration, conservation and use of genetic resources; and
- Address recommendations to the Executive Committee on all matters that relate to genetic aspects of Poplars and Willows.

99. The activities of the Working Party include the conservation of natural genetic resources and ecosystems and genetic improvement by conventional breeding, application of molecular genetic tools and techniques, genetical transformation and creation of new cultivars for phytoremediation, waste water treatment etc.

100. Achievements from 2000-2004 included:

- Inventory of Poplar and Willow breeding programmes conducted through a questionnaire survey of research institutions in IPC member countries; and
- Inventory of Poplar and Willow pollen collections conducted through a questionnaire survey of research institutions in IPC member countries.

101. The results of a SWOT analysis of the current situation included:

<p><b>Strengths</b></p> <ul style="list-style-type: none"> <li>• Network of capable Poplar and Willow breeders link knowledge, experience and data between countries;</li> <li>• Sharing of genetic materials, methodologies, technologies and information;</li> <li>• Collaborate in joint research proposals;</li> <li>• Use of Poplar as a “model” tree for biotechnology research.</li> </ul>	<p><b>Weaknesses</b></p> <ul style="list-style-type: none"> <li>• Insufficient interaction between Working Parties;</li> <li>• Insufficient interaction between breeding fraternity;</li> <li>• Lack of financial support for breeding research projects and programmes.</li> </ul>
<p><b>Opportunities</b></p> <ul style="list-style-type: none"> <li>• Increased interest on conservation and biodiversity;</li> <li>• Multiplicity of functions of Poplars and Willows;</li> <li>• Increased productivity of industrial tree plantations to reduce pressure on natural forest resources;</li> <li>• Outreach through the IPC website; and</li> <li>• Collaboration with the IUFRO Poplar and Willow Working Group.</li> </ul>	<p><b>Threats</b></p> <ul style="list-style-type: none"> <li>• Insufficient knowledge of member country needs; and</li> <li>• General bias against tree breeding, particularly in Western Europe.</li> </ul>
<p><b>Lessons Learned</b></p> <ul style="list-style-type: none"> <li>• Soundly-based breeding programmes are fundamental to support the multiplicity of functions of Poplars and Willows.</li> </ul>	<p><b>The Way Forward</b></p> <ul style="list-style-type: none"> <li>• Strengthen networks with breeding researchers, producers and users;</li> <li>• Encourage greater interaction, development of a database of breeders and pursue questionnaire responses; and</li> <li>• Inter-organizational and multi-disciplinary approaches at national, regional and international levels.</li> </ul>

102. The agreed programme of work 2005-2008 included:

- Analysis and reporting of the inventory of Poplar and Willow breeding programmes and the Inventory of the Poplar and Willow pollen collections upload to the Working Party portal on the IPC website, by December 2006 - Responsibility of Teresa Cerrillo, Sasa Orlovic and Sarah Hurst;
- Develop a database of clonal collections and gene banks to be maintained by scientific extension centres and network of maintenance arboreta (within the Sub-committee on Nomenclature and Registration), by December 2006 - Responsibility of Sarah Hurst, Stefano Bisoffi and Sandra Sharry;
- Photographic portfolios of Poplar and Willow cultivars (Sub-committee on Nomenclature and Registration), by December 2008 – Responsibility of Sven De Vries and Martin Weih; and
- Guide to experimental design with Poplars and Willows, by December 2008 - Responsibility of Stefano Bisoffi, Brian Stanton and Francisco Zamudio.

103. A feature of the Working Party is the linkages and interaction with the other IPC Working Parties including:

- Genetic selection for insects and disease resistance (Poplar and Willow Insects and Pests, and Diseases);
- Genetics and breeding for biomass production (Production Systems and Environmental Applications of Poplars and Willows); and
- Genetics and breeding for phytoremediation (Production Systems and Environmental Applications of Poplars and Willows).

104. The following officials of the Working Party were elected by acclamation for the period 2004-2008:

Ms Teresa Cerrillo (Argentina), Chair  
 Mr Sasa Orlovic (Serbia & Montenegro), Vice-Chair  
 Mr Qiwen Zhang (China), Vice-Chair  
 Ms Sara Hurst (New Zealand), Technical Secretary

## X PRODUCTION SYSTEMS

105. The Working Party held four technical meetings during which 13 scientific/technical papers were presented and a wide range of posters on production systems were displayed and discussed at the poster sessions.

106. The Working Party scope included the technical, social, environmental and economic/ecological dimensions of production systems, whether to provide biomass or other products or services to society.

107. Achievements from 2000-2004 included:

- Divided the Production Systems and Environmental Applications Working Party into the Production Systems and the Environmental Applications Working Parties (see below);
- Planned and organized the 3<sup>rd</sup> International Poplar Symposium, Uppsala, Sweden, 26-29 August 2002; and
- Direct inputs to the IUFRO Working Groups and IEA Bioenergy Task Groups 30 (Short Rotation Crops for Bioenergy Systems) and 31 (Biomass Production for Energy from Sustainable Forestry).

108. The agreed programme of work 2005-2008 included:

- Update and maintain the Working Party web portal on the IPC website, including list of experts, question forum, meetings schedule and links to associated sites;
- Link with Genetics, diseases and insects Working Parties on matters pertaining to production systems;
- Document cases of sustainable management of production systems;
- Promote Governments and National Poplar Commissions to address such Poplar and Willow issues as sustainable cropping systems, taxation and public education/awareness; and
- Assist in planning and organizing the 4<sup>th</sup> International Poplar Symposium, Nanjing, China, in June 2006.

109. The following officials of the Working Party were elected for the period 2004-2008;

Mr Theo Verwijst (Sweden), Chair  
 Mr Tim Volk (USA), Technical Secretary  
 Mr Jon Johnson (USA), Technical Secretary

## XI ENVIRONMENTAL APPLICATIONS

110. The Working Party, for the first time, held three technical meetings during which nine scientific/technical papers were presented and a wide range of posters on the environmental applications of Poplars and Willows were displayed and discussed at the poster sessions.

111. The mission statement of the new Working Party was to better share the knowledge and technology on the implementation of cost-effective environmental applications of Poplars and Willows to contribute to sustainable livelihoods and rural development.

112. The above activities are grouped into two primary categories:

- Site and landscape improvement, including bank stabilization, combating desertification and salinisation, shelterbelts and windbreaks, and soil rehabilitation; and
- Phytoremediation of polluted soil and water, including buffer zones, contaminated sites, waste water management/treatment and organic waste management.

113. The results of a SWOT analysis of the current situation included:

<p><b>Strengths</b></p> <ul style="list-style-type: none"> <li>• Multi-disciplinary and multi-functional;</li> <li>• International network of researchers exists;</li> <li>• Sound foundation of research; and</li> <li>• Multiple benefits from environmental enhancement.</li> </ul>	<p><b>Weaknesses</b></p> <ul style="list-style-type: none"> <li>• Many environmental benefits have not direct financial value;</li> <li>• Public resistance to land-use change;</li> <li>• Social barriers to adopt new technologies; and</li> <li>• Short life span and susceptibility to pests and diseases;</li> <li>• Economics for bioenergy remain marginal.</li> </ul>
<p><b>Opportunities</b></p> <ul style="list-style-type: none"> <li>• Environmental uses lower cost than engineered alternatives;</li> <li>• Combining environmental applications of Poplars and Willows and engineering approaches;</li> <li>• Greater awareness of environmental issues by the public and institutions; and (Green = Good)</li> <li>• Increased demand for reduced CO<sub>2</sub> technologies; and</li> <li>• Poplars and Willows forests and trees increasingly contributing to rehabilitation of degraded lands, combating desertification and restoration of landscapes.</li> </ul>	<p><b>Threats</b></p> <ul style="list-style-type: none"> <li>• Unwillingness of society to pay for benefits;</li> <li>• Potential for eco-terrorism, particularly with biotechnologies and transgenics;</li> <li>• Resistance to use of exotic species and monocultures;</li> <li>• Invasion of exotic species into natural ecosystems; and</li> <li>• Vulnerability to insect, disease and pest attack.</li> </ul>

<b>Lessons Learned</b>	<b>The Way Forward</b>
<ul style="list-style-type: none"> <li>• Need for genetic diversity in planted forest development;</li> <li>• Research without outreach is not effective in implementation;</li> <li>• Caution should be exercised in introducing new plant materials into existing ecosystems;</li> <li>• Combine scientific and traditional/local knowledge in implementation of projects;</li> <li>• Participate with, and collaborate with, local people, including in benefit sharing;</li> <li>• Pilot and demonstrate new technology in the field before production or commercial scaled operations; and</li> <li>• Any transfer of knowledge and technology needs to be complemented with public awareness programmes.</li> </ul>	<ul style="list-style-type: none"> <li>• Compile a repository of existing knowledge and make it available on the IPC website;</li> <li>• Create/write implementation manuals;</li> <li>• Package information suitable for policy makers and decision makers;</li> <li>• Develop criteria and indicators for gender associated issues;</li> <li>• Produce educational materials (schools and universities) and</li> <li>• Produce environmental guidelines for landscape/bio-aesthetic sensitive projects.</li> </ul>

114. The agreed programme of work 2005-2008 included:

- Review of and document case studies in alternative environmental applications;
- Prepare a directory of experts to detail the individual or organizational activities and key publications;
- Review, update and maintain the Environmental Applications Working Party portal on the IPC website;
- Establish templates and reporting procedures to document and review case studies, list of experts, other useful websites and a reference library of relevant publications;
- Contribute a chapter on Environmental Applications in the new Poplar and Willow book;
- Participate in the joint meeting with IEA Bioenergy Task Group 30 (Autumn 2006); and
- Conduct a meeting of the Working Party at the 4<sup>th</sup> International Poplar Symposium, Nanjing, China, June 2006.

115. The following officials of the Working Party were elected by acclamation for the period 2004-2008:

Mr Kurth Perttu (Sweden), Chair  
 Mr Jud Isebrands (USA), Vice-Chair  
 Ms Drusilla Riddell-Black (UK), Technical Secretary

## XII RECOMMENDATIONS OF THE COMMISSION

116. Delegates reviewed the recommendations formulated by the subsidiary bodies and, after discussion, adopted the following recommendations:

### Nomenclature and Registration

117. The recommendations from the Sub-Committee for Nomenclature and Registration were as follows:

- Raise the awareness of the National Poplar Commissions, National Statutory Plant Registration Authorities, Professional Organizations and Research Institutions on the need for a reliable nomenclatural system for poplars;
- Integrate molecular tools and morphological analysis into a coherent identification system; and



- Make standard, reproducible and reliable methods available to a broad range of clients (nurserymen, trade control authorities etc).

### Poplar and Willow Protection

#### a) Diseases

118. The Working Party on Poplar and Willow Diseases made the following recommendations:

- Encourage Governments and National Poplar Commissions to recognize that, to manage Poplars and Willows in a more sustainable manner, it will be necessary to allocate more funds and resources to research disease population dynamics and interactions with host species;
- Raise Government, National Poplar Commissions and other stakeholder awareness about the importance of issues related to import/export of plant genetic materials and quarantine; and
- Inform Governments and National Poplar Commissions about the increasing requirements for research on disease problems caused by plant-associated bacteria in correlation with specific environmental conditions.

#### b) Insect Pests

119. The Working Party on Poplar and Willow Insect Pests made the following recommendations:

- Recognize that invasive insects and pests are posing an increasing threat to both endemic and exotic Poplar and Willow species;
- Connect international researchers and producers through networks to monitor and contain the impacts of insects and pests on production and trade of Poplar and Willow forest products; and
- Identify priority problems and collaborative approaches to address them through multi-disciplinary approaches across different Working Parties.

### Harvesting and Utilization

120. The Working Party on Poplar and Willow Harvesting and Utilization made the following recommendations:

- Encourage Governments to promote sustainable Poplar and Willow forest production systems to contribute to programmes on alleviating poverty in rural populations;
- Encourage Governments to report separate Poplar and Willow statistics in production and utilization data, taking into account their ecological and socio-economic impacts; and
- Strengthen the integration of production, harvesting and utilization systems by improving the communications between the producers and users of forest products and byproducts.

### Breeding and Selection

121. The Working Party on Poplar and Willow Genetics, Conservation and Improvement made the following recommendations:

- Strengthen networks with breeding researchers, producers and users;
- Encourage greater interaction, development of a database of breeders and pursue questionnaire responses; and
- Encourage inter-organizational and multi-disciplinary approaches at national, regional and international levels.

### Production Systems

122. The Working Party on Poplar and Willow Production Systems made the following recommendations:

- Enlist FAO, through IPC, to mobilize National Poplar Commissions/Councils in member countries to fulfil their mandates more actively;
- Encourage National Poplar Commissions to conduct biennial meetings within member countries to facilitate identification of country specific issues, needs and transfer of knowledge and technology; and
- Recognize the role of Poplars and Willows in multi-disciplinary, inter-sectoral production systems.

### Environmental Applications

123. The Working Party on Environmental Applications made the following recommendations:

- IPC and the Working Party need to collaborate more fully with other international agencies (IUFRO, IEA, ITTO, etc.) to exchange ideas;
- IPC and the Working Party need to become more engaged in dialogue with regulatory bodies, environmental engineers and environmental organizations; and
- IPC, through FAO, need to encourage greater collaboration with National Poplar Commissions and Councils.

### Plenary

124. The 22<sup>nd</sup> Session of the International Poplar Commission highlighted that, in 70 temperate and boreal countries of the world, the Poplar and Willow estate exceeds 80 million hectares, often in fragile ecosystems under threat from communities seeking to supplement their meagre livelihoods. The estate includes: natural forests, 74 million hectares; planted forests, 5 million hectares; and agroforestry, 2 million hectares. Poplars and Willows are managed to primarily provide environmental functions (rehabilitation of degraded lands, forest landscape restoration, combating desertification, protection of soils and water, conservation of biological diversity, providing shelter and shade and sequestering carbon); however, they also provide in excess of 120 million m<sup>3</sup>/year of wood and fibre for conversion to a wide range of forest products, particularly in developing countries and those with economies in transition. The ownership of the global Poplar and Willow estate is 59 percent public sector, 26 percent private smallholder and 15 percent private corporate and they make a major contribution to poverty alleviation, food security and integrated development in both rural and urban environments.

125. Recommendations from the 22<sup>nd</sup> Session of the IPC to the 17<sup>th</sup> Session of the FAO Committee on Forestry, in March 2005, are the following:

- Governments recognize the positive contribution that Poplars and Willows can make to sustainable forestry, rehabilitation of degraded lands, forest landscape restoration, mitigation of climate change (Kyoto Protocol) and rural development in temperate and boreal regions of the world, particularly developing countries and those with economies in transition;
- Governments recognize the need for clear and consistent policies, laws, regulations and strategies to maximize the contribution of Poplars and Willows in forestry, agriculture and integrated rural development;
- Governments recognize the critical role of research, demonstration, education and extension to transfer knowledge and technology in Poplar and Willow culture, wood processing and use to maximize social, environmental and economic benefits;

- Member Governments to the International Poplar Commission encourage the public and private sectors (corporate and smallholder), research and education fraternity and civil society to form partnerships to strengthen their National Poplar Commissions to translate science into development and policy into practice;
- Member Governments recognize the outreach that is available through FAO regional and country offices and through their IPC website to share outputs from National Poplar Commissions and Working Parties to more effectively reach stakeholders and potential beneficiaries; and
- Governments in temperate and boreal regions of the world encourage membership to the International Poplar Commission to share scientific, technical, social, environmental and economic knowledge and technology to enhance the contribution of Poplars and Willows to sustainable forest management and integrated development, including poverty alleviation and food security.

### XIII ADMISSION OF NEW MEMBER COUNTRIES

#### Uzbekistan

126. Ms Gulya Vildanova, on behalf of the Government of the Republic of Uzbekistan, formally submitted an application for membership to the IPC, under Article II(1) of the Convention governing the IPC. There was strong support in favour of the application.

### XIV MAJOR INITIATIVES

#### a) First International Conference on the Future of Poplar Culture

127. Mr Federico Radice Fossati, National Poplar Commission, Italy, reported on the First International Conference on the Future of Poplar Culture, hosted by the National Poplar Commission of Italy, the Italian Ministry of Foreign Affairs and the Ministry of Agricultural and Forest Policies in collaboration with FAO, held in Rome, from 13 to 15 November 2003.

128. The Conference underlined the role of the International Poplar Commission in providing a network to facilitate transfer of technology and in connecting individuals and institutions for the development of sustainable poplar and willow culture and use.

129. Other recommendations included:

- harmonizing rules regarding the environment and worker safety as a prerequisite for developing sound markets and avoiding conflicts between industries in developed and developing countries;
- promoting sustainable forest management with emphasis on participatory approaches and benefit sharing, protection of genetic resources and natural poplar and willow populations where they are threatened by human activities;
- exploiting molecular biology's potential for tree improvement without sacrificing conventional, long-term research and experimentation;
- strengthening poplar and willow research in the expanding EU through institutional collaboration and twinning, with particular regard to testing in different sites, and under different ecological and climatic conditions;
- promoting fast-growing poplar and willow plantations for wood and fibre production to take the pressure off natural and semi-natural forests managed primarily for conservation and other environmental and protective functions.

130. Conference participants urged the IPC membership, which comprises 37 of FAO's Member Nations, to contribute by linking at regional, national and international levels to collaborate in implementing these actions.

131. A follow-up side event on the social, environmental and economic contributions of poplars and willows to sustainable rural development was held at FAO headquarters on 4 December 2003 to coincide with the FAO Conference (29 November to 10 December 2003), the biennial meeting of FAO's Governing Body.

#### b) Poplar and Willow Book

132. Jim Richardson and Jud Isebrands, Coordinating Editors, outlined that as the prior publications, *Poplars in forestry and land use*, FAO 1958 and *Poplars and willows in wood production and land use*, FAO 1980, were now outdated, the IPC Executive Committee, in 2002, proposed a new edition to reflect the global distribution and to include new knowledge and technology. The objective is to produce a major review in an accessible format, providing a practical overview and guide to their basic characteristics, cultivation and use as well as issues, problems and trends.

133. It is proposed that the audience include the public and private sectors, decision makers and policy makers in forestry, agriculture and environment ministries and foresters, ecologists, botanists, agronomists and environmental engineers.

134. The scope would be global: increase focus on willows, recognize the new focus on environmental uses and sustainable rural development, provide a sourcebook and information guide and contain a comprehensive bibliography, index, contacts and links to Internet resources.

135. The content of the publication would include chapters on an introduction; poplars and willows in the world; natural ecosystems; genetic resources; industrial plantations; environmental uses; abiotic risks; diseases and animal pests; wood properties and utilization; markets, trends and outlook; sustainable rural development; conclusions; appendices; research agencies, institutions and organizations; bibliography; index; and glossary.

136. It was outlined that each chapter would initially be prepared as a stand-alone FAO working paper to be uploaded in e-format to the IPC website in PDF format. The advantage is that maps, graphics and photographs could be used extensively to illustrate points. The e-format would also allow ready updating. As resources become available, it was proposed to employ a scientific editor to publish a formal printed book, ultimately in English, French and Spanish.

137. At a side event during the 22<sup>nd</sup> Session, interest in the Poplar and Willow book project had been high and a large number of contributing authors had registered to assist in writing chapters within their specialization. It is proposed to complete the publication by 31 December 2006.

#### XV ELECTION OF THE EXECUTIVE COMMITTEE, 2004-2008

138. From nineteen candidates representing sixteen countries, twelve were elected to the Executive Committee for the period 2004-2008. An election was held by secret ballot involving twenty one country delegates authorized to represent their respective governments (Argentina, Belgium, Canada, Chile, China, Croatia, Finland, France, Germany, India, Italy, Korea [Republic of], Morocco, New Zealand, Romania, Serbia & Montenegro, Spain, Sweden, Turkey, United Kingdom and USA).

139. The following were elected to the Executive Committee for the period 2004-2008: Catherine Bastien (France); Stefano Bisoffi (Italy); Alberto Calderón (Argentina); Judeson Isebrands (USA); R.P.S. Katwal (India); Patrick Mertens (Belgium); Sasa Orlovic (Serbia & Montenegro); Ariane Plourde (Canada); Marijke Steenackers (Belgium); Jaime Ulloa (Chile); Theo Verwijst (Sweden); Yin Weilun (China). The collection and counting of the votes was scrutinized by Georg von Wuehlisch (Germany), Cornelius van Oosten (Canada) and Carlos Álvarez Moreno (Spain).

#### XVI DATE AND PLACE OF THE NEXT SESSION

140. Delegates were informed that no formal invitations had been received but informal invitations had been received from China and India to host the 23rd Session of the IPC in 2008. Nominations will remain open until the 43rd Executive Committee meeting in 2006. FAO was requested to approach China, India and other member countries, and on the basis of their responses, to decide the venue of the next Session.

#### XVII COLLABORATION WITH IUFRO

##### a) International Poplar Symposium, Nanjing, China

141. Mr Brian Stanton, announced that the 4th International Poplar Symposium would be hosted by IUFRO and the Nanjing Forestry University in Nanjing, China, from 5 to 9 June 2006. The IPS was planned every four years to share the science of Poplars and Willows, alternating its meetings with those of FAO's International Poplar Commission which facilitated the translation of the science into policies and development.

142. The theme of the conference would be "Meeting the Needs of a Growing World through Poplar and Willow Science: Combining Traditional and Novel Approaches in the Genomic Era". The goal was to present current scientific findings in poplars and willows that lend themselves to unique and valuable opportunities to meet a multiplicity of production and environmental applications. Some of these included management of biotic/abiotic risks in poplar plantations, expanding the base of China's genetic resource, increasing wood production to achieve domestic sustainability, and building varietal adaptability to the diversity of China's poplar-growing regions.

143. The symposium would explore how poplars and willows are and can be used to resolve environmental challenges and take advantage of emerging economic opportunities. Technical sessions would be formed into four main thematic areas:

- generating products for human consumption;
- ecological restoration and environmental amelioration;
- conservation of genetic resources; and
- promotion of economic development and well-being in agricultural regions.

144. A unifying theme would be how to use genomics to enhance and build upon the productivity of more traditional research in such areas as tree breeding, physiology, pathology, and silviculture. The symposium would be of interest to anybody working not only with poplars and willows, but other tree species as well. Further information is available on the 4th IPS website:

<http://ips2006.njfu.edu.cn/index.html>.

##### b) IUFRO in Forestry

145. Mr Heinrich Schmutzenhofer, IUFRO Representative, Latin America, highlighted that IUFRO provided international scientific collaboration, an essential component to achieve successful conservation

and sustainable management of forests. This was achieved through facilitating transfer of knowledge and technology through:

- improved scientific knowledge through collaborative research and cooperation;
- access to information and dissemination through global networks;
- strengthened investigative capacity of scientific institutions and scientists.

146. The structure, mandate and tools of IUFRO were introduced. These are available on the IUFRO website: <http://www.iufro.org/>.

147. The Global Forestry Information Service (GFIS) was introduced. The information is available on <http://www.gfis.net/>.

148. It was announced that the IUFRO Global Congress would be hosted by the Australian Government, sponsored by the Department of Agriculture, Fisheries and Forestry, Brisbane, Australia, 8-13 August 2005. The theme would be “Forestry in the Balance: Linking Tradition and Technology”. The Global Congress website is: <http://www.iufro2005.com/>.

#### XVIII OTHER MATTERS

149. Comprehensive and educational post-session study tours, coordinated by CONAF in Chile and SAGPyA and the Forestry Faculty of the National University of Cuyo in Argentina, were made possible with the kind collaboration of a wide range research organizations, educational institutes, private sector and Government personnel, to whom the IPC are indebted. Registrations for the study tours included: Chile (120 participants), Mendoza (100 participants) and Buenos Aires (80 participants). The itineraries of the study tours are included in Annex VI.

#### XIX CLOSING OF THE SESSION

150. In the closing remarks, Mr Carlos Weber, Chairman, recognized the efforts of the Working Parties in striving to derive programmes of work to serve National Poplar Commissions and Poplar and Willow stakeholders. He thanked and congratulated CONAF, IPC Secretariat of FAO and the Diego Portales Convention Centre for an excellent and productive meeting. He also congratulated new members of the Executive Committee for a productive term in office to serve the needs of IPC and member countries. He stressed the need to translate scientific research into field actions in development and to encourage the IPC and National Poplar Commissions to improve dialogue and networks to meet the needs of the major IPC stakeholders.

151. Dr Stefano Bisoffi expressed grateful thanks CONAF and SAGPyA as hosts, members of the organizing committee, the participants and all those providing support services, for a most successful meeting.

**INTERNATIONAL POPLAR COMMISSION**  
**FORTY-SECOND SESSION OF THE EXECUTIVE COMMITTEE**  
Santiago, Chile, 28 November, 2004

**AGENDA**

1. Opening of the Session
2. Adoption of the Agenda
3. Activities of the Working Parties and Sub-Committee on Nomenclature and Registration of Poplars since the Forty-first Session of the Executive Committee in Rome, Italy, September 2002
4. Proposals for the composition of the Executive Committee for the period 2004-2007
5. Proposals for the date and place of the next session of the Executive Committee
6. Responsibilities of Working Groups
7. Development of the International Poplar Commission, its Working Parties, and Communications
8. Other matters

**INTERNATIONAL POPLAR COMMISSION**  
**TWENTY-SECOND SESSION AND RELATED SESSIONS**  
Santiago, Chile, 29 November - 2 December 2004

**AGENDA**

29 November 2004

1. Opening of the Session
2. Adoption of the Agenda
3. Election of Officers
4. The Contribution of Poplars and Willows to Sustainable Forestry and Rural Development

2 December 2004

5. Poplar and Willows: Summary of Statistics and Economics, Cultivation and Silviculture, Policy and Legislation and Operation of National Poplar Commissions
6. Poplar and Willow Genetics, Conservation and Improvement
7. Poplar and Willow Diseases
8. Poplar and Willow Insects and other Animal Pests
9. Production Systems
10. Environmental Uses of Poplars and Willows
11. Logging and Utilization of Poplar and Willow Wood
12. Sub-committee for Nomenclature and Registration
13. Admission of New Member Countries
14. Significant Initiatives (International Conference on the Future of Poplar Culture, Rome, 2003; Poplar and Willow Book)
15. Proposals for the next session
16. Collaboration with IUFRO
17. Other matters
18. Election of Members of the Executive Committee for the four-year period (2004-2007)
19. Concluding Remarks and Closure of the Session




**INTERNATIONAL POPLAR COMMISSION  
TWENTY-SECOND SESSION,  
PROGRAMME SUMMARY**

	Monday 29 Nov	Tuesday 30 Nov			Wednesday 1 Dec						Thursday 2 Dec
08:00	Registration	Break			Break						Break
09:00 - 10:30	Opening Plenary Session E+S+F  Room 5	2A Genetics E+S  Room 5	2B Env.App. E+S  Room 6	2C Insects E+S  Room 8	Business Genetics E+S  Room 5	6A Prod.Sys E+S  Room 6	Business Env.Appl E+S  Room 8	Business Insects E  Room 9	Business Diseases E  Room 10	Business Log & Ut. E  Room 11	Report of six Working Parties, Exec.Commit. to Plenary E+S+F Room 5
11:00-11:15	Stanton	3A Genetics E+S  Room 5	3B Env.App. E+S  Room 6	3C Diseases E+S  Room 8	Business Genetics E+S  Room 5	Business Prod.Sys E+S  Room 6	Business Env.Appl E+S  Room 8	Business Insects E  Room 9	Business Diseases E  Room 10	Business Log & Ut. E  Room 11	Elections, 23 <sup>rd</sup> Session and Other Matters  Closing Plenary E+S+F  Room 5
11:15-11:30	Ulloa Bravo										
11:30-11:45	Abalos										
11:45-12:00	Katwal										
12:00-12:15	Mclvor [pres. John Charles]										
12:15-12:30	Discussion										
	Lunch (Salon Azul)	Lunch (Salon Azul)			Lunch (Salon Azul)						Lunch (S. Azul)
14:00-14:15	Scarascia Mugnozza	4A Genetics E+S  Room 5	4B Prod.Sys E+S  Room 6	4C Env.Appl E+S  Room 8	Business Insects E+S  Room 5	Business Diseases E+S  Room 6	Business Log & Ut. E+S  Room 8	Business Genetics E  Room 9	Business Prod.Sys E  Room 10	Business Env.Appl E  Room 11	Informal meeting New Executive Committee E  Room 5  City Tour
14:15-14:30	Riddell-Black										
14:30-14:45	Smart										
14:45-15:00	VanDen Broeck/Van Slycken										
15:00-15:15	Augustin										
15:15-15:30	Discussion										
	Break	Break			Break						

16:00-17:30	1A Genetics E+S+F Room 5	1B Prod.Sys E+S Room 6	1C Insects E+S Room 8	5A Genetics E+S Room 5	5B Prod.Sys E+S Room 6	5C Log & Ut. E+S Room 8	Business Insects E+S Room 5	Business Diseases E+S Room 6	Business Log & Ut. E+S Room 8	Business Genetics E Room 9	Business Prod.Sys E Room 10	Business Env. Appl. E Room 11	
17:30-18:30	Poster session (Salon Azul)			Poster Session Salon Azul			Poster session (Salon Azul)						
19:00-21:00	Welcome cocktail (Salon Azul)			IUFRO Poplar Unit Room 6			Cocktail hosted by FAO						Closing Dinner (20 p.m.) - Salon Azul

Plenary 
   
 Genetics 
   
 Environmental Applications 
   
 Logging and Utilization 

Insects and Pests 
   
 Production Systems 
   
 Diseases 

**INTERNATIONAL POPLAR COMMISSION  
TWENTY-SECOND SESSION  
DETAILED PROGRAMME**

**Monday 29 November**

08:00	Registration and material distribution
09:00	<b>Opening Plenary Session (Room 5)</b>

10:30 Coffee

**Plenary Session (Room 5)**

Time	No.	1st Author	(name)	Title
11:00	147	STANTON	Brian	Benefiting Humankind Through Improved Application of Poplar Research and Technology
11:15	na	ULLOA BRAVO	Jaime	An Integrated and Sustainable Production System – Compañía Agrícola y Forestal El Alamo Ltda, Chile
11:30	125	ABALOS	Marta I.	Industrialization of the Chilean Basket Willow
11:45	35	KATWAL	R.P.S.	Contribution of Poplars and Willows to Sustainable Forestry and Rural Development in India
12:00	82	McIVOR [pres. John Charles]	Ian	Poplar and Willow Development and Use in New Zealand
12:15	Discussion			

12:30 Lunch

**Plenary Session (Room 5)**

Time	No.	1st Author	(name)	Title
14:00	63	SCARASCIA MUGNOZZA	Giuseppe	Environmental Aspects of Biomass Production: the POPFACE Experiment as a Model to Study the Impact of the Increasing CO <sub>2</sub> on Agro-forestry Systems
14:15	159	RIDDELL- BLACK	Drusilla	The Contribution of Environmental Applications of Poplar and Willow to Rural Development and the Principles of Sustainable Forestry
14:30	57	SMART	Lawrence B.	Genetic Improvement of Shrub Willow ( <i>Salix</i> ) Crops for Bioenergy and Environmental Applications
14:45	26	VANDEN BROECK [pres. Van SLYCKEN]	An	Potential Gene Flow Between Cultivated Poplars and Native Black Poplars ( <i>Populus nigra</i> ) in Belgium
15:00	50	AUGUSTIN	Sylvie	Transgenic Poplar and the Poplar Leaf Beetle: State-of-the-Art on the Risk of Evolution of Insect Resistance
15:15	Discussion			

15:30 Coffee

### Concurrent sessions 1-A, 1-B, 1-C

#### Session 1-A: Genetics, Conservation and Improvement – Biodiversity Conservation and Improvement (Room 5)

Time	No.	1st Author	(name)	Title
16:00	96	KAJBA	Davorin	<i>Populus nigra</i> ssp. <i>caudina</i> and their Importance for the Forest Tree Improvement and Conservation of Poplar Genetic Resources
16:20	11	TSAREV	Anatoly P.	Selection of Willows in the Russian Federation
16:40	28	TOPLU	Ferit	Recent Developments on the Breeding and Conservation of Gene Resources of Black Poplar ( <i>Populus nigra</i> L.) in Turkey
17:00	114	BEUKER	Egbert	Breeding and Cultivation of Aspen and Hybrid Aspen in Finland
17:20	Discussion			

#### Session 1-B: Production Systems: Cultural Practices and Stand Management (Room 6)

Time	No.	1st Author	(name)	Title
16:00	93	KOVACEVIC [pres. ORLOVIC]	Branislav	Influence of Sources of Variation on Rooting of Hardwood Cuttings of Black Poplars (Section Aigeiros)
16:20	23	EATON	Jake	Growth Response of Hybrid Poplar to Different Irrigation Levels
16:40	119	VAN OOSTEN	Cees	Fertilization of Short-Rotation Intensive-Culture (SRIC) Hybrid Poplar Plantations in Southwestern British Columbia, Canada
17:00	170	VOLNEY	Jan	Risks to Fast-Growing Species Plantation Yields in Canada
17:20	Discussion			

#### Session 1-C: Insect Pests (Room 8)

Time	No.	1st Author	(name)	Title
16:00	139	BALDINI	Aida	Phytosanitary Condition of Poplars and Willows in Chile
16:20	81	ALFARO [pres. GONZÁLEZ]	René	The Threat of the Ambrosia Beetle, <i>Platypus sulcatus</i> (= <i>mutatus</i> ) to World Poplar Resources
16:40	79	APARICIO [pres. ACHINELLI]	Alejandro	Relationships Between Poplar ( <i>Populus</i> spp.) Stand Structural Variables and Ambrosia Small-Borer Attacks ( <i>Megaplatypus plicatus</i> ) (Bréthes)
17:00	31	RAMÍREZ	Claudio C.	Differential Susceptibility to the Aphid <i>Chaitophorus leucomelas</i> (Hemiptera: Aphididae) of Poplar Hybrids Recently Introduced in Chile
17:20	Discussion			

Tuesday 30 November

Concurrent sessions 2-A, 2-B, 2-C

**Session 2-A: Genetics, Conservation and Improvement – Breeding of Poplars and Willows**

**(Room 5)**

Time	No.	1st Author	(name)	Title
09:00	65	JOHNSON	Jon D.	Nitrogen Use Efficiency and Productivity of Hybrid Poplars: Clonal Differences Related to Parentage
09:20	48	DE BOEVER	Lieven	Variability of Physical Properties in a Multiclinal Stand of <i>Populus deltoides x nigra</i>
09:40	124	ABALOS	Marta I.	Trials of Willow ( <i>Salix</i> spp) Species and Provenances in the North, Central and South Areas of Chile
10:00	83	JINHUA	Li	Interspecific Hybrid Between <i>Populus deltoides</i> and Five Provenances of <i>P. cathayana</i>
10:20	Discussion			

**Session 2-B: Environmental Applications of Poplars and Willows – Decontamination of Polluted Soils**

**(Room 6)**

Time	No.	1st Author	(name)	Title
09:00	3	KUZOVKINA	Y. A.	Metal Resistance and Accumulation in North American Willow ( <i>Salix</i> L.) Species
09:25	146	DOS SANTOS	MaríaNoel	Heavy Metal Tolerance in Hydroponically-Grown <i>Salix</i> species: Perspectives for Phytoextraction
09:50	58	DOTY	Sharon	Degradation of Organic Environmental Pollutants by Poplar
10:15	Discussion			

**Session 2-C: Insect Pests (cont.d)**

**(Room 8)**

Time	No.	1st Author	(name)	Title
09:00	14	CHARLES	John	The Willow Sawfly, <i>Nematus oligospilus</i> , in New Zealand: 1997-2004
09:20	148	ALDERETE	Mariela	Present Situation of the Population of <i>N. oligospilus</i> Foers ter (= <i>N. desantisi</i> Smith) (Hym.: Tenthredinidae) in the Tafi Valley (Tucuman, Argentina). Future Considerations
09:40	126	PARRA	Patricio	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
10:00	8	ÖZAY	Faruk S.	Investigation on <i>Pygaera (Clostera) anastomosis</i> L., an Insect Pest of Poplar
10:20	Discussion			

10:30 Coffee

### Concurrent sessions 3-A, 3-B, 3-C

#### Session 3-A: Genetics, Conservation and Improvement - Molecular Genetics and Biotechnologies

(Room 5)

Time	No.	1st Author	(name)	Title
11:00	169	VILDANOVA	Gulya	<i>In vitro</i> selection and Propagation of Poplar Varieties and Hybrids on Tolerance to Abiotic Stresses
11:20	131	CAPARRINI [pres. RACCHI]	Simona	Efficient Detection of DNA Polymorphism in the <i>Populus</i> Genus by Single-Strand Conformational Polymorphism of Catalase Genes
11:40	160	MUHS	H.-J.	Wood Biological, Wood Chemical, Wood Technological, and Phytopathological Investigations in roC Transgene Aspen Grown in a Field Trial
12:00	27	ZHANG [pres. MENG ZHU LU]	Deqiang	Repression of the UDP-Glucose Dehydrogenase Resulted in Decreased Pentosan Content in Transgenic Tobacco
12:20	Discussion			

#### Session 3-B: Environmental Applications of Poplars and Willows–Treatment of Waters/Production of Biomass

(Room 6)

Time	No.	1st Author	(name)	Title
11:00	94	ISEBRANDS	J.G. (Jud)	Field Evaluations of Phytoremediation of Volatile Organic Compounds with Poplars and Willows in the Midwestern USA
11:25	110	HEINSOO	Katrin	Experimental Sustainable Wastewater Purification by <i>Salix</i> in Small Estonian Communities
11:50	34	DIMITRIOU	Ioannis	Full-scale Phytoremediation Systems Combined with Wood Fuel Production Using Short Rotation Willow Coppice
12:15	Discussion			

#### Session 3-C: Diseases

(Room 8)

Time	No.	1st Author	(name)	Title
11:00	19	NISCHWITZ	Claudia	The Use of <i>Sphaerellopsis filum</i> for Biological Control of <i>Melampsora</i> species on <i>Populus</i> Species
11:20	154	HUVENNE	Hanneke	Watermark Disease of Willows in Agricultural Areas: A Study of the Effect of Environment and Soil Characteristics on Diseases Expression
11:40	47	BENNETT	Chandalin	Host-Range Studies of <i>Melampsora</i> on <i>Salix</i> in the Pacific Northwest Region of the United States
12:00	151	NEJAD	Pajand	Identification Methods of Ice-Nucleation Active (INA) and Pathogenic Bacteria in Woody Plants ( <i>Salix</i> ) as an Energy Crop
	12	ULUER	Kazim	Investigation of the Resistance of Some Poplar Clones to the Rust Fungi <i>Melampsora alli-populina</i> Kleb. in Turkey
12:20	Discussion			

12:30 Lunch

**Concurrent sessions 4-A, 4-B, 4-C**

**Session 4-A: Genetics, Conservation and Improvement – Clonal Selection and Identification**

**(Room 5)**

Time	No.	1st Author	(name)	Title
14:00	80	ORLOVIC	Sasa	Influence of Selection of Black Poplars on Water Use Efficiency
14:20	62	CERRILLO	Teresa	Comparative Growth of Poplar Clones in the South of Santa Fe, Argentina – First Report
14:40	129	ZAMUDIO	Francisco	Evaluation of New Poplar Hybrids for Industrial Uses and Environmental Protection in Chile
15:00	64	SABATTI [pres. SCARASCIA]	Maurizio	Poplar Germplasm Resources in Short Rotation Forestry (SRF): Implications for Biomass Production
15:20	Discussion			

**Session 4-B: Production Systems – Short Rotation Production of Biomass for Energy and Fiber**

**(Room 6)**

Time	No.	1st Author	(name)	Title
14:00	135	BONARI [pres. PICCHI & FRAGA]	Enrico	Comparison of Three Coppice Intervals on a Nine Years Poplar Biomass Production
14:20	22	WEIH	M.	Comparison of Willow Growth in Pot and Field Conditions Under Various Treatments
14:40	132	LABREQUE	M	From Living Walls to Wood Panels: Multiple Uses of Willow Stems Produced in Short Rotation Culture in Southern Quebec, Canada
15:00	Discussion			

**Session 4-C: Environmental Applications of Poplars and Willows – Landscape Improvement and Carbon Sinks**

**(Room 8)**

Time	No.	1st Author	(name)	Title
14:00	164	TAHVANAINEN	Liisa	Visual Impacts of Energy-Wood Plantations to Rural Landscape as an Attraction Factor
14:20	67	GARDINER	Emile S.	Early Stand Development, Carbon Sequestration and Wildlife Use Under Conventional <i>versus</i> Intensive Afforestation Practices in the Lower Mississippi Alluvial Valley
14:40	136	MATTHEI JENSEN	Enrique	Salicaceae: Biotechnological Tools for the Restoration of Streams with Torrential Fluvio-metric Features
15:00	Discussion			

15:30 Coffee

**Concurrent sessions 5-A, 5-B, 5-C****Session 5-A: Genetics, Conservation and Improvement – Clonal Selection and Identification (Cont.d) (Room 5)**

Time	No.	1st Author	(name)	Title
16:00	49	DE BOEVER	Lieven	Early Selection of Willow Clones Based on Physical-Mechanical Properties
16:20	145	SINGH [pres. BANGARWA]	Rajbir	Evaluation of Various Clones of <i>Populus deltoides</i> for Root and Shoot Characters Under Nursery Conditions
16:40	134	BISWAS	Sas	Emerging Trends in Clonal Taxonomy of Poplars Introduced in India for Certification and Sustainable Utilization
17:00	133	CAMUSSI	Alessandro	The Identification of Poplar Clones by Montecarlo Methods: The Random Forests
17:20	Discussion			

**Session 5-B: Production Systems – Environmental Quality****(Room 6)**

Time	No.	1st Author	(name)	Title
16:00	95	BERTHELOT [pres. AUGUSTIN]	Alain	Inventory of Biodiversity in Poplar Stands in the Picardie Region
16:20	106	CALDERÓN	A.D.	Poplars – Tree Growth Ring Studies and Site Quality
16:40	75	DENEGRI [pres. ACHINELLI]	Gerardo	Costs Comparison of Different Poplar ( <i>Populus</i> spp.) Establishment Systems for the Argentinian Humid Pampas
17:00	Discussion			

**Session 5-C: Logging and Utilization****(Room 8)**

Time	No.	1st Author	(name)	Title
16:00	127	GONZÁLEZ	Patricio	Industrial Model for the Use of Poplar Plantations of Small and Medium Producers in the Central Area of Chile
16:25	121	ALVÁREZ	Carlos	Study of the Quality of Poplar Wood for Veneer Peeling in an Experimental Plantation
16:50	2	SHENGZUO	Fang	Variation in Microfibril Angle and its Influence on Wood Properties of Poplars
17:15	Discussion			



Wednesday 1 December

**Session 6-A**

**Session 6-A: Production Systems - Rural Economy**

**(Room 6)**

Time	No.	1st Author	(name)	Title
09:00	168	VALLEJOS BARRA	Oscar Santiago	Simulator of Growth for <i>Populus</i>
09:20	138	AHUJA	Gulshan Kumar	Growing Poplars in Private Farm Forestry in India - Sustainability Issues
09:40	71	MERTENS	Patrick	Social, Economical and Ecological Resiliency as Major Factors for Poplar Culture Sustainability
10:00	Discussion			

**Business meetings of Working Parties**

**WITH interpretation in English (E) and Spanish (S)**

09:00	Genetics, Conservation and Improvement	(Room 5)
	Environmental Applications	(Room 8)

**WITHOUT interpretation**

09:00	Insects	(Room 9)
	Diseases	(Room 10)
	Logging and Utilizations	(Room 11)

10:30 Coffee

**WITH interpretation in English (E) and Spanish (S)**

11:00	Genetics, Conservation and Improvement	(Room 5)
	Production Systems	(Room 6)
	Environmental Applications	(Room 8)

**WITHOUT interpretation**

11:00	Insects	(Room 9)
	Diseases	(Room 10)
	Logging and Utilizations	(Room 11)

12:30 Lunch

**WITH interpretation in English (E) and Spanish (S)**

14:00	Insects	(Room 5)
	Diseases	(Room 6)
	Logging and Utilizations	(Room 8)

**WITHOUT interpretation**

14:00	Genetics, Conservation and Improvement	(Room 9)
	Production Systems 10)	(Room
	Environmental Applications 11)	(Room

15:30 Coffee

**WITH interpretation in English (E) and Spanish (S)**

16:00	Insects	(Room 5)
	Diseases	(Room 6)
	Logging and Utilizations	(Room 8)

**WITHOUT interpretation**

16:00	Genetics, Conservation and Improvement	(Room 9)
	Production Systems	(Room 10)
	Environmental Applications 11)	(Room

## LIST OF PARTICIPANTS

## MEMBERS OF THE COMMISSION

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TWENTY SECOND SESSION  
PAPERS SUBMITTED<sup>2</sup>**

**Working Party on Poplar and Willow Genetics, Conservation and Improvement**

**Abalos R. Marta I., Soto Hernán, Salinas Aldo** – *Trials of Willow (Salix spp.) Species and Provenances in the North, Central and South Areas of Chile*

**An Xinmin, Zhang Zhiyi, Wang Dongmei** – *Isolation of Key Genes Involved in Flowering from Populus tomentosa Carr. and Modification of Flowering in Transgenic Plants*

**Augustin Sylvie, Carré Gabriel, Courtin Claudine, Dubois Valérie, Génissel Anne, Lorme Philippe, Wenes Anne Laure, Réjasse Agnès, Pilate Gilles, Lepié Jean Charles, Bourguet Denis** – *Transgenic Poplar and the Poplar Leaf Beetle : State-of-the-Art on the Risk of Evolution of Insect Resistance*

**Beuker Egbert, Stenvall Niina, Kasanen Risto, Luoranen Jaana, Gang Zhang** – *Breeding and Cultivation of Aspen and Hybrid Aspen in Finland*

**Biswas Sas, Alpana** – *Emerging Trends in Clonal Taxonomy of Poplars Introduced in India for Certification and Sustainable Utilization*

**Cabello Angel, Villacura Luis, Ulloa Jaime** – *Growth Comparison of Four Poplar Clones en Region VII of Chile*

**Cabello Angel, Villacura Luis, Ulloa Jaime, Grez Iván** – *Test of Poplar Clone Introduction in Region VII, Chile*

**Calagari M., Jafari Mofidabadi A.** - *Intraspecific Hybridization in Populus euphratica Oliv. Using in vitro Technique*

**Calagari M., Jafari Mofidabadi A., Tabari M., Hosseini S.M.** – *Investigation of Morphological and Genetic Variation in Natural Populations of Populus euphratica Oliv. in Iran*

**Calderón A.D., Riu N.E., Bustamante J.A., Settepani V.G., Pérez S.A.** – *Behaviour of Populus sp. in Mendoza, Argentina*

**Calderón A.D., Riu N.E., Bustamante J.A., Settepani V.G., Pérez S.A.** - *Phenological Observations on 20 Poplar Clones in Mendoza, Argentina*

**Camussi A., Stefanini F.M.** – *The Identification of Poplar Clones by Montecarlo Methods: The Random Forests*

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<sup>2</sup> Copies of papers can be requested directly from authors.

**Caparrini S., Velasco R., Camussi A., Racchi M.L.** – *Efficient Detection of DNA Polymorphism in the Populus Genus by Single-strand Conformational Polymorphism of Catalase Genes*

**Cerrillo Teresa** – *Comparative Growth of Poplar Clones in the South of Santa Fé, Argentina – First Report*

**Cortizo Silvia, Divo de Sesar Marta, Mema Vanesa** – *Rooting of Uninodal Cuttings of Populus spp. In Greenhouse*

**De Boever Lieven, Van Peteghem Pierre, Van Acker Joris** – *Early Selection of Willow Clones Based on Physical-Mechanical Properties*

**De Boever Lieven, Van Acker Joris, Stevens Marc** – *Variability of Physical Properties in a Multiclonal Stand of Populus deltoides x nigra*

**Deqiang Zhang, Meng-Zhu Lu, Minjie Wang, Ling Li** – *Repression of the UDP-Glucose Dehydrogenase Resulted in Decreased Pentosan Content in Transgenic Tobacco*

**González Antoñanzas F., Grau Corbí J.M., Montoto Quinteiro J.L.** – *Experimental Comparison of New Poplar Clones for Non-Intensive and Sustainable Populiculture*

**González Antoñanzas F., Grau Corbí J.M., Montoto Quinteiro J.L., Zuloaga Bueno F.** – *The Populus sp. Clone Collection of the “Sierra de Pela” Populetum in Campisábalos (Guadalajara), Spain*

**Héois Bernard, Baltzinger Marie** – *Commercialization of Poplar Clones in Europe – Comparison Between European Regulations*

**Huang Qinjun, Su Xiaohua, Zhang Xianghua** – *Mapping and Quantitative Trait Loci (QTL) Analysis for Wood Properties in Populus deltoides x P. cathayana*

**Jinhua Li, Qiwen Zhang** – *Interspecific Hybrid Between Populus deltoides and Five Provenances of P. cathayana*

**Johnson Jon D., Shan Zhao** – *Nitrogen Use Efficiency and Productivity of Hybrid Poplars: Clonal Differences Related to Parentage*

**Kajba D., Ballian D., Heinze B., Idzajt M., Bogdan S.** – *Populus nigra ssp. caudata and Its Importance for Forest Tree Improvement and Conservation of Poplar Genetic Resources*

**Keary Kevin, A’Hara Stuart, Whitaker Helen, Cottrell Joan** – *Genetic Variation in Black Poplar from Ireland Assessed using Microsatellites*

**Kuzovkina Y.A., Quigley M.F.** - *Differential Response of Willow (Salix L.) Species to Acute Ozone Exposure*

**Lin Shanzhi, Zhang Zhiyi, Lin Yuanzhen, Guo Huan** - *Characterization and cDNA Sequence of G6PDH from Populus suaveolens in Freezing-Acclimation-Induced Freezing Resistance*

**Marinucci L., Sharry S., Abedini W.** – *An Efficient Method to Produce Highly Regenerative Tissues from Populus deltoides cv. “Catfish 2” and “Catfish 5” for Future Use to Genetic Transformation*

**Mertens Patrick** – *Selecting Cultivars for Mixed Stands and Periodic Renewals: Two Key issues for Sustainable Plantation Management and Disease Resistance*

**Mertens Patrick** – *The Return of Selections of Populus deltoides x nigra (P. x euramericana)*

**Michiels Boudewijn, Steenackers Marijke, Van Slycken Jos, De Boever Lieven** – *New Belgian Poplar Clones Results of Controlled Crossings with P. maximowiczii*

**Monteoliva Silvia E., Marlats Raúl M.** – *Growth and Fiber Length in Willow Clones and Their Interaction Clone-Plantation Site*

**Muhs H.J., Fladung M., Schmitt U., Meier D., Puls J., Schwab E., Gieffers W.** – *Wood Biological, Wood Chemical, Wood Technological, and Phytopathological Investigations in ROLC Transgene Aspen Grown in a Field Trial*

**Orlovic Sasa, Galic Zoran, Klasnja Bojana, Pilipovic Andrej** – *Influence of Selection of Black Poplar on Water Use Efficiency*

**Pan Mingjian, Tu Zhongyu, Wang Baosong, Guo Qun** – *Willow Genetic Improvement in China*

**Qiwen Zhang, Jinhua Li** – *New Poplar Cultivars for Industrial Wood Plantations in China*

**Sabatti Maurizio, Ricciotti Luca, Paolucci Isabella, Gaudet Muriel, Nardin Fabrizio, Scarascia Mugnozza Giuseppe** – *Poplar Germplasm Resources in Short Rotation Forestry (SRF): Implications for Biomass Production*

**Senisterra Gabriela, Murace Mónica, Marlats Raúl** - *Preliminary Study of Health State of Populus Clones Originated from Intra and Interspecific Crossings*

**Singh N.B., Kumar Dinesh** – *Estimation of Genetic Parameters for Breeding Strategies on Poplar (Populus deltoides Bartr.) Based on Factorial and Nested Mating Designs*

**Singh N.B., Singh Kadam** – *Heterosis for Growth Traits in Intra-specific Hybrids of Poplar (Populus deltoides Bartr.)*

**Singh N.B., Huse Santosh A.** – *Improvement of Tree Willow in India: I. Variation of Wood Characteristics*

**Singh N.B., Huse Santosh A.**– *Improvement of Tree Willows in India: II. Genetic Variability of Photosynthetic Traits and their Relationship*

**Singh N.B., Huse Santosh A.** – *Improvement of Tree Willows in India: III. Variation on Quantitative Genetic Parameters on Growth Traits*

**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*

**Singh N.B., Huse Santosh A., Gupta R.K.** - *Principal Component Analysis of Tree Willow Clones for Genetic Improvement of Quantitative Traits*

**Singh N.B., Jha R.K.** – *Variability, Associations and Path Coefficient Analysis in Poplar (Populus deltoides Bartr.)*

**Singh Rajbir, Bangarwa K.S.** – *Evaluation of Various Clones of Populus deltoides for Root and Shoot Characters under Nursery Conditions*

**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 (Salix) Crops for Bioenergy and Environmental Applications*

**Su Xiao-hua, Huang Qin-jun, Zhang Bing-yu, Zhang Xiang-hua** – *Advances in Genetic Engineering of Populus in China*

**Thomas Barb** – *Poplar Breeding in the Boreal Regions of Canada – Challenges and Opportunities*

**Toplu Ferit** – *Recent Developments on the Breeding and Conservation of Gene Resources of Black Poplar (Populus nigra L.) in Turkey*

**Tsarev Anatoly P.** - *Selection of Willows in the Russian Federation*

**Vanden Broeck An, Quataert P., Cox K., Storme V., Boerjan W., Van Slycken J.** – *Potential Gene Flow Between Cultivated Poplars and Native Black Poplars (Populus nigra L.) in Belgium*

**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*

**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 Populus davidiana at Age 12*

**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 Populus davidiana Dode*

**Zamudio Francisco** - *Evaluation of New Poplar Hybrids for Industrial Uses and Environmental Protection in Chile*

**Zelasco Samanta, Balestrazzi Alma, Carbonera Daniela, Confalonieri Massimo, Giorcelli Achille, Mattivi Fulvio, Bonadei Martina, Bisoffi Stefano** – *Investigation of Horizontal Gene Transfers from GM Poplar Plants to Soil Micro-Organisms and of the Effect of GM-Induced Production of Resveratrol*

**Zhang Deqiang, Zhang Zhiyi, Yang Kai, Li Bailian** – *Genetic Mapping in Populus tomentosa x P. bolleana and Populus tomentosa using AFLP Markers*

**Zhang Deqiang, Zhang Zhiyi, Yang Kai, Li Bailian** – *Quantitative Trait Loci (QTL) Analysis of Leaf Morphology and Spring Bud Flush in Populus tomentosa*

**Zhang Qian, Zhang Zhiyi, Lin Shanzhi, Lin Yuanzhen** - *Molecular Detection and Insect Feeding Tests of 2-year Old Transgenic Poplar with the CPTI Gene*

**Zhuge Qiang, Wang Jiechen, Chen Ying, Guo Tongbin, Ji Baozhong, Huang Minren, Huang Minxiu** - *Study on Insect-Resistance in Transgenic Poplars Transformed with Cpti and Bt Genes*

## Working Party on Poplar and Willow Production Systems

**Abd El-Dayem A.M.A., Sarhan A.M., Darwesh M.A., Saied Ahmed M.I.** – *Endogenous Factors Affecting Rooting of Populus Species*

**Abrahamson Lawrence P., White Edwin H., Volk Timothy A., Smart Lawrence B.** – *Multiple Benefits of Willow Energy Crops*

**Achinelli Fabio, Aparicio Alejandro, Prada Enrique, Marlats Raúl** – *Weed Control with Herbicides in Salicaceae Plantations of Buenos Aires, Argentina*

**Acma Bulent** – *New Horizons of Natural Resources in the Southeastern Anatolia Region of Eurasia and the Southeastern Anatolia Project (GAP) in Turkey*

**Berthelot Alain, Augustin Sylvie, Godin José, Decocq Guillaume** – *Inventory of Biodiversity in Poplar Stands in the Picardie Region*

**Bonari Enrico, Picchi Gianni, Fraga Alejandro, Ginanni Marco, Guidi Werther, Piccioni Emiliano** – *Comparison of Three Coppice Intervals on a Nine Years Poplar Biomass Production*

**Borodowski Estebán D., Suárez Raúl O.** – *Seasonal Growth of Populus deltoides Clones in the Delta of the Parana River, Argentina*

**Calagari M., Modir-rahmati A., Asadi F., Ghasemi R.** – *A Study of Poplar Biomass Utilization as a Source of Fodder*

**Calderón A.D., Riu N.E., Bustamante J.A., Settepani V.G., Pérez S.A.** – *Poplars: Planting Density in Mendoza, Argentina*

**Calderón A.D., Pérez S.A., Roig F.A., Riu N.E., Bustamante J.A., Settepani V.G., Campos S.** - *Poplars: Tree Growth Ring Studies and Site Quality*

**Calderón A.D., Riu N.E., Bustamante J.A., Settepani V.G., Pérez S.A.** – *Populus sp.: Trial of Different Planting Stock Types and Planting Seasons at Mendoza, Argentina*

**Casaubon E., Gurini L., Cueto G., Gómez L., Zanelli M., Berrondo G., González A.** – *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)*

**Chocovar Alcira, Picchi Carlos** – *Spacing Trial in Relation to Dendrometric Values in Poplar Plots at the “Poza de las Avispas” Forest Experiment Station, Province of Jujuy, Argentina*

**Corvalán Patricio, Álvarez Pamela** – *Taper Equation for Populus x euramericana cv 1-214 Clones in Two Plantation Stands, VI Region, Chile*

**Denegri Gerardo, Achinelli Fabio, Marlats Raúl** – *Costs Comparison of Different Poplar (Populus spp.) Establishment Systems for the Argentinian Humid Pampas*

**Dhiman R.C., Gandhi J.N.** – *Replacement of Mortality in Poplar Plantations*

**Eaton Jake** – *Growth Response of Hybrid Poplar to Different Irrigation Levels*

**Fan Yongming, Zhang Zhiyi, Xie Yimin, Ren Dakai, Luo Yuanyuan, Wu Yuying, He Jing** – *The Fibre Morphology Variation of Triploid Clones of Populus tomentosa and its Supposed Harvesting Age for Paper Industry*

**Galic Zoran, Ivanisevic Petar, Orlovic Sasa, Pecec Sasa** – *Influence of Soil Fertility of Some Black Poplar Clones on Fluvisols and Humofluvisols in the Middle Danube Basin*

**Gardiner Emile S., Stanturf John A., Hamel Paul B., Leininger Theodor D.** – *Early Stand Development, Carbon Sequestration and Wildlife Use Under Conventional Versus Intensive Afforestation Practices in the Lower Mississippi Alluvial Valley*

**Gennari Ana, Prada Enrique, Achinelli Fabio, Marlats Raúl** – *Juvenile Growth Patterns in Poplar Clones (Populus spp.) in the Argentinian Humid Pampas*

**Gennari Ana, Prada Enrique, Achinelli Fabio, Vivas Pablo** – *Planting Stock Management to Improve Survival at Planting of Populus deltoides Bartr. ex Marsh. Clones Obtained in Argentina*

**Hassan Mohammad K., Haji Salim H.** – *The Financial Analysis of Poplar Populus nigra L. Plantations*

**Katwal R.P.S.** – *Contributions of Poplars and Willows to Sustainable Forestry and Rural Development in India*

**Keary Kevin, Bulfin Michael, Mac Siúrtaín Máirtín** – *Height and Diameter Growth of Four-Year Old Hybrid Poplar Clones*

**Kovačević Branislav, Rončević Savo, Ivanišević Petar** – *Influence of Sources of Variation on Rooting of Hardwood Cuttings of Black Poplar (Section Aigeiros)*

**Kumar Gulshan** – *Growing Poplars in Private Farm Forestry in India: Sustainability Issues*

**Labrecque M., Teodorescu T.I.** - *From Living Walls to Wood Panels: Multiple Uses of Willow Stems Produced in Short Rotation Culture in Southern Quebec, Canada*

**Lin Shanzhi, Zhang Zhiyi, Lin Yuanzhen, Zhang Qian, Guo Huan** – *The Role of Calcium and Calmodulin in Freezing-Acclimation-Induced Freezing Resistance of Populus tomentosa Cuttings*

**McIvor Ian, Hurst Sarah, Charles John, Fung Lindsay** – *Poplar and Willow Development and Use in New Zealand*

**Mertens Patrick** - *Aspen Can Be Conserved by Changes in Silvicultural Practices in Belgium*

**Mertens Patrick** – *Social, Economical and Ecological Resiliency as Major Factors for Poplar Culture Sustainability*

**Riu N.E., Sanjurjo V.C., Bustamante J.A., Calderón A.D.** – *Seven Years of Poplar Response to Different Irrigation Regimes*

**Riu N.E., Settepani V.G.** – *Six Years of Poplar Response to Different Irrigation Regimes*

**Shedeed M.R., Mousa A.A., Abo Tabel N.S., Abd El-Dayem A.M., Gharib H.A.** – *Effect of Irrigation by Industrial Sewage Water on the Growth of Two Poplar Species*

**Sixto Hortensia, Aranda Ismail, Alba Nuria, Grau José Manuel** - *Methodology for the Detection of Salt Tolerance Differences among P. Alba L. Clones Using Chlorophyll Fluorescence as a Tool*

**Sotomayor Alvaro, Ulloa Jaime, García Edison** – *Agroforestry with Populus in Chile*

**Stanton Brian J.** – *Benefiting Humankind Through Improved Application of Poplar Research and Technology*

**Stanturf John A., Bland Dexter, Samuelson Lisa, Leininger Theodor, Burke Bryce** - *Three-Year Growth Response of Four Clones of Eastern Cottonwood (Populus deltoides Bartr. ex Marsh.) to Fertigation*

**Suárez Raúl O.** – *Poplars Integrated with Cattle in an Associated and Sustainable Way*

**Toro J., Fernández A., Ulloa J., Villacura L.** – *Productivity Decline and Reduced Soil Nutrient Availability After Several Rotations in Intensively Managed Populus euramericana Plantations in the Central Valley of Chile*

**Ulloa Jaime B., Villacura, Luis Z.** - *Agricultural and Forestry Company El Alamo Ltd – an Approach to Integrated and Sustainable Production*

**Ulloa Jaime B.** – *An Integral and Sustainable Production System*

**Vallejos Barra Oscar Santiago** – *Simulator of Growth for Populus*

**Volney W. Jan A. Alfaro Rene, Bothwell Peter, Hogg Ted, Hopkin Anthony, Hurley Edward, Laflamme Gaston, Metsaranta Yuha, Warren Gary** – *Risks to Fast-Growing Species Plantation Yields in Canada*

**van Oosten C., Zabek L.M.** – *Fertilization of Short-Rotation Intensive-Culture (SRIC) Hybrid Poplar Plantations in Southwestern British Columbia, Canada*

**Weih M., Nordh N.E.** – *Comparison of Willow Growth in Pot and Field Conditions Under Various Treatments*



## Working Party on Logging and Utilization of Poplar and Willow Wood

**Abalos Romero Marta I.** – *Industrialization of the Chilean Basket Willow*

**Alvarez Carlos, Romero Pedro, Padro Antonio** – *Study of the Quality of Poplar Wood for Veneer Peeling in an Experimental Plantation*

**Cortizo Silvia, Mema Vanesa, Pathauer Pablo, López Gustavo** - *Basic Wood Density Estimation Using Pilodyn in Breeding Programs of Populus spp.*

**del Pozo Santiago** - *Chilean National Forest Extension Programme Smallholder Poplar Plantations in the VI Region*

**González Patricio, Cerda Ignacio** - *Industrial Model for the Use of Poplar Plantations of Small and Medium Producers in the Central Area of Chile*

**Henin Jean-Marc, Mertens Patrick, Jourez Benoît** - *Definition of a Methodology to Assess the Yield and Quality of Poplar Peeling Wood – Application on Six Populus x interamericana (Populus deltoides x Populus trichocarpa) Clones*

**Shengzuo Fang, Wenzhong Yang, Xiangxiang Fu** - *Variation in Microfibril Angle and its Influence on Wood Properties of Poplars*

**Verani Stefano, Sperandio Giulio** – *Techno-Economic Evaluation of the Use of Mechanization in Poplar Plantation Harvesting*

**Villegas María Silvina, Marlats Raúl** – *Measurement of Wood Optical Properties in Willow*

## Working Party on Environmental Uses of Poplars and Willows

**Copeland Ruth** – *Nitrate Leaching and Biomass Production from Short Rotation Coppice Fertilized with Dairy Slurry*

**Dickinson Nicholas** – *Manipulation of Brownfield Contamination Using Willow and Poplar*

**Dimitriou Ioannis, Aronsson Pär** – *Full-scale Phytoremediation Systems Combined with Wood Fuel Production Using Short Rotation Willow Coppice*

**Dos Santos M.N., Wieshammer G., Vemon R.M., Wenzel W.** – *Heavy Metal Tolerance in Hydroponically-Grown Salix Species: Perspectives for Phytoextraction*

**Doty Sharon L., Moore Allison L., Vajzovik Azra, Nishimura Joel D., Meilan Richard, Gordon Milton P., Strand Stuart E.** – *Degradation of Organic Environmental Pollutants by Poplar*

**Duggan Joddie** – *A Willow Vegetation Filter Treating Landfill Leachate: Preliminary Findings from a Fully-lined Field-scale System in the United Kingdom*

**Gardiner Emile S.** – *Establishment of Black Willow (Salix nigra Marsh.) for Restoration of Bottomland Hardwood Forests in the Lower Mississippi Alluvial Valley, USA*

**Heinsoo Katrin, Koppel Andres** – *Experimental Sustainable Wastewater Purification by Salix in Small Estonian Communities*

**Hendrickson Cheryl** – *Successional Companion Planting of Salix for Environmental Applications in Canada*

**Isebrands J.G.** – *Field Evaluations of Phytoremediation of Volatile Organic Compounds with Poplars and Willows in the Midwestern USA*

**Kuzovkina Y.A., Quigley M.F.** – *Metal Resistance and Accumulation in North American Willow (Salix L.) Species*

**Matthei Jensen Enrique** – *Salicaceae: Biotechnological Tools for the Restoration of Streams with Torrential Fluvio-metric Features*

**Meng Ping, Zhang Jingsong, Zhang Qiwen** – *Effects of Poplar-Wheat Intercropping on the Atmospheric CO<sub>2</sub> Concentration Above the Crop Canopy*

**Riddell-Black Drusilla, Isebrands Jud G., Alker Gill** – *Meeting Regulatory Requirements Using Poplar and Willow for Wastewater Treatment*

**Scarascia Mugnozza Giuseppe, Calfapietra Carlo, Sabatti Maurizio, De Angelis Paolo** - *Environmental Aspects of Biomass Production: The “Poplar Free Air CO<sub>2</sub> Enrichment (POPFACE)” Experiment as a Model to Study the Impact of the Increasing CO<sub>2</sub> on Agroforestry Systems*

**Tahvanainen Liisa** – *Visual Impacts of Energy-Wood Plantations to Rural Landscape as an attraction Factor*

## Working Party on Poplar and Willow Diseases

**Bennett Chandalin, Newcombe George, Aime Catherine** – *Host-range Studies of Melampsora on Salix in the Pacific Northwest Region of the United States*

**Huvenne H., Messens E., De Vos B., Desmet T., Vandriessche G., Steenackers M., Maes M.** – *Watermark Disease of Willows in Agricultural Areas: A Study of the Effect of Environment and Soil Characteristics on Diseases Expression*

**May de Mio Louise Larissa, Amorim Lilian** - *Influence of Temperature and Leaf Wetness Duration on the Monocyclic Components of Poplar Rust*

**May de Mio Louise Larissa, Amorim Lilian, Moreira L.M.** – *Progress of Epidemics and Evaluation of Damage Caused by Rust in Poplar Clones*

**Nasini Marco, Mazzaglia Angelo, Giorcelli Achille, Anselmi Naldo** - *Endophytic Fungi in Poplar Trees*

**Nejad Pajand, Ramstedt Mauritz, Granhall Ulf** – *Identification Methods of Ice-Nucleation Active (INA) and Pathogenic Bacteria in Woody Plants (Salix) as an Energy Crop*

**Nischwitz Claudia, Newcombe George** – *The Use of Sphaerellopsis filum for Biological Control of Melampsora species on Populus species*

**Ramstedt, M.** – *Melampsora Willow Rust in Chile and Northern Europe: Part of a Metapopulation?*

**Uluer Kazim, Şakir Özyay Faruk, Selek Fazil** – *Investigation of the Resistance of Some Poplar Clones to the Rust Fungi Melampsora alli-populina Kleb. in Turkey*

## Working Party on Poplar and Willow Insects and Other Animal Pests

**Alderete Mariela, Liljesthröm Gerardo** – *Present Situation of the Population of N. oligospilus Foerster (=N. desantisi Smith) (Hymn.: Tenthredinidae) in the Tafi Valley, Tucuman, Argentina: Future Considerations*

**Alderete Mariela, Fidalgo Patricio** – *The Parasitoids of Nematus oligospilus Foerster (Hym.: Tenthredinidae) in California (USA) for a Programme of Biological Control in Argentina*

**Alfaro René, González Paola, Villaverde Raúl, Battaglino Nilo, Allegro Gianni, Humble Leland** – *The Threat of the Ambrosia Beetle, Platypus sulcatus (=mutatus) to World Poplar Resources*

**Aparicio Alejandro, Liljesthröm Gerardo, Achinelli Fabio, Marlats Raúl** – *Relationships between Poplar (Populus spp.) Stand Structural Variables and Ambrosia Small-Borer Attacks (Megaplatypus plicatus) (Bréthes)*

**Baldini Aida, Beèche Marcos, Sartori Angelo** – *Phytosanitary Condition of Poplars and Willows in Chile*

**Charles John, Chhagan Asha, Allan Doug, Fung Lindsay, Hurst Sarah, McIvor Ian** – *The Willow Sawfly, Nematus oligospilus, in New Zealand: 1997-2004*

**Giménez Rosana A., Moya Mariana C., Michetti Marcelo** – *Border Row Spray of Poplar Bark with Carbaryl for Megaplatypus mutatus (Coleoptera, Platypodidae) Control*

**Giménez Rosana A., Seoane Nicolás** – *Chemical Control of Ambrosia Beetles: Effect on the Soil Litter Decomposition*

**Giménez Rosana A., Kesten Eva** – *Pesticide Effect on Earthworms and Decomposition of Organic Matter in a Silvopastoral System*

**Giménez Rosana Alejandra** – *Use of X-Rays to Study the Woodborer Megaplatypus mutatus (Chapuis, 1865) (Coleoptera: Platypodidae)*

**Mácola G., García Sáez J.G., Holgado M.G., Fuligna F.** – *Evaluation of Traps for Monitoring Platypus sulcatus (Coleoptera: Platypodidae)*

**Marquina Jorge, Marlats Raúl, Nuñez Cresto Marcela** – *Platypus mutatus Chapuis (=Platypus sulcatus) Some Characteristics of Galleries Produced by the Attack at Plantations of Populus deltoides cv. (Catfish 2 USA) According to Trunk and Attacked Section Sizes*

**Özay Faruk Ş., Güler Necdet, Uluer Kazim, Selek Fazil** – *Investigation of Pygaera (Clostera) anastomosis L., an Insect Pest of Poplar*

**Parra Patricio, González Marlene, Contador Patricia, Soto Daniel, Salinas Aldo** – *Study of the Life Cycle of Tremex fuscicornis Fabr. (Hymenoptera, Siricidae) and Level of Parasitism achieved by Megarhyssa sp. (Hymenoptera, Ichneumonidae) in V and Metropolitan Regions, Chile*

**Ramírez Claudio C., Zamudio Francisco, Verdugo Jaime, Nuñez Mónica E.** – *Differential Susceptibility to the Aphid Chaitophorus leucomelas (Hemiptera: Aphididae) of Poplar Hybrids Recently Introduced in Chile*

**Selek Fazil** - *The Lepidoptera Species Harmful to Poplar in the Izmit and Adapazari Regions*

**INTERNATIONAL POPLAR COMMISSION  
TWENTY-SECOND SESSION  
NATIONAL REPORTS**

National reports on activities related to poplar and willow cultivation, exploitation and utilization 2000-2003 were received from 23 countries, 22 member countries and one observer country as follows:

Argentina	Islamic Republic of Iran
Belgium	Italy
Bulgaria	Korea
Canada	New Zealand
Chile	Russian Federation <sup>3</sup>
People's Republic of China	Serbia Montenegro
Croatia	Spain
Egypt	Sweden
Finland	Turkey
France	United Kingdom
Germany	United States of America
India	

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<sup>3</sup> Russian Federation is not a member of FAO or IPC, but has the second largest Poplar and Willow resource in the world

**INTERNATIONAL POPLAR COMMISSION  
TWENTY-SECOND SESSION**

**ITINERARIES OF STUDY TOURS**

Chile and Argentina, 3-9 December 2004

**Chile (120 participants)**

Friday, 3 December 2004

- Departure from Santiago;
- Silviculture of smallholder production plantations, Cóinco, Coltauco;
- Smallholder poplar culture and sawmilling, Cóinco, Coltauco;
- Smallholder plantations and cottage industry furniture and handicraft making, based on basket willow culture, Chimbarongo;
- Poplar culture in association with cattle grazing and construction with Poplar, Cóinco, Coltauco; and
- Overnight at Termas Quinamavida, Linares, evening hosted by El Alamo Company Ltd.

Saturday, 4 December 2004

- Commercial poplar plantation and agroforestry management – an integrated and sustainable forestry production system, Copihue, kindly hosted by the El Alamo Company Ltd; and
- Return to Santiago.

**Argentina (100 participants in Mendoza and 80 in Buenos Aires)**

Sunday, 5 December 2004

- Santiago via the Andes Mountains to Mendoza, Argentina;
- Poplar establishment, 2,000 metres above sea level, Marañón Family property, Uspallata Valley; and
- Overnight, Mendoza, evening hosted by Zuccardi family.

Monday 6 December 2004

- Commercial irrigated poplar plantations and clones of Faculty of Agricultural Sciences, Osvaldo Leonangeli Forest Establishment, near Mendoza;
- Commercial irrigated poplar plantations, Miguel Obrador Forest Establishment, near Mendoza;
- Poplar plantations for chip production, El Cepillo Forest Establishment, Mendoza;
- Poplar and Willow recreational area, El Capacho Forest Establishment, Mendoza;
- Particle board and furniture factory, Cuyoplacas SA and Platinum Industrial Establishments, Mendoza; and
- Flight Mendoza to Buenos Aires, overnight Buenos Aires.

Tuesday 7 December 2004

- Poplar and willow research and demonstration, INTA Research Station, Paraná de las Palmas River and Laurentino Comas Canal;
- Field observations of INTA along the delta on comparative poplar clone trials, poplar management and nursery production;
- Various aspects of commercial poplar management, Don Pedro Forest Establishment, Rio Carabelas;
- Various aspect of commercial poplar and willow management, Las Carabeles Forest Establishment, Rio Carabeles; and
- Reception, Buenos Aires boat club and return to Buenos Aires

Wednesday, 8 December 2004

- National holiday, free day.

Thursday, 9 December 2004

- Wood industries and forest product manufacturing, Compañía General de Fósforos Sudamericana, José León Suárez, Province of Buenos Aires;
- Wood industries and forest product manufacturing, Ederra S.A, sawmill in San Fernando, Province of Buenos Aires;
- Forestry Development Project introduction of programmes and activities for production and industry development on the Delta, Forestry Extension Unit; and
- Return to Buenos Aires and completion of study tours.

**INTERNATIONAL POPLAR COMMISSION  
TWENTY-SECOND SESSION**

**EVALUATION OF THE 22<sup>nd</sup> SESSION**

1 How would you rate the planning, announcements, pre-registration and access to information prior to the 22<sup>nd</sup> Session

Excellent	26%	Very Good	38%	Satisfactory	32%	Unsatisfactory	4%
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Suggestions for improvement in the future

- Uncertain access to IPC and IPC2004 websites – Google leads to an obsolete 1999 IPC website (FORIS is not yet Googable)
- More detailed announcements earlier
- Clearer and more simple registration and payment
- More rapid response to queries

2 How would you rate the programme and structure of the 22<sup>nd</sup> Session?

Excellent	33%	Very Good	45%	Satisfactory	22%	Unsatisfactory	
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Suggestions for improvement in the future

- More interaction and discussions between Working Parties prior to completion of Business Meetings
- Half day Working Party Business Meetings sufficient with preparation of reports and powerpoint presentations during the remainder of the day
- Reduce the number of posters and increase the number of oral presentations
- Increase presentations in plenary sessions, particularly in topics of cross-cutting interest
- Dedicate the Plenary Session clearly to the Theme
- Combined poster and cocktail sessions worked well
- Distribute guidelines for working parties in advance to everyone, not only the Chair and Rapporteur
- Consider a half day field trip mid week
- Arrange a group photo of all participants

3 How would you rate the administrative and logistical support by the Host Secretariat at the 22<sup>nd</sup> Session?

Excellent	29%	Very Good	50%	Satisfactory	17%	Unsatisfactory	4%
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Suggestions for improvement in the future

- Multi-lingual capability at registration and payments desks essential
- More regular advice regarding tours and logistical information
- Combine processes of registration and payments
- Simplify airport – hotel transfers
- Advise version of Powerpoint on website prior to the meeting



- Ensure presenters can view their Powerpoint slides and control the projector
- Provide greater number of computers for internet access
- Ensure quality poster accessories available
- Prepare a final list of participants during the Session

#### 4 How would you rate the administrative and logistical support by the FAO Secretariat?

Excellent	66%	Very Good	30%	Satisfactory	4%	Unsatisfactory	
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Suggestions for improvement in the future

- Clarify roles of the FAO Secretariat and Host Secretariat
- Continue to provide the excellent services

#### 5 How would you rate the technical support by FAO to the 22<sup>nd</sup> Session?

Excellent	53%	Very Good	34%	Satisfactory	13%	Unsatisfactory	
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Suggestions for improvement in the future

- Continue to have Book of Abstracts, Country Progress Reports and Global Syntheses available in future Sessions in CD and hard copy
- Make deadlines for Papers, Country Progress Reports and Working Party Reports closer to Session dates
- On the IPC website, alert readers to New information

#### 6 How would you rate the performance of the interpreter services?

Excellent	42%	Very Good	42%	Satisfactory	16%	Unsatisfactory	
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Suggestions for improvement in the future

- Ensure modern equipment used to ensure volume and background noise control
- Avoid sharing of headsets (health)
- Need E, F, S in all Working Party sessions, if budgets allow

#### 7 Any other comments to improve IPC Sessions in the future?

- Provide another half day of Concurrent Working Party sessions
- Distribute oral presentations electronically prior to the meeting
- Strive for greater representation of stakeholders, particularly private sector
- Provide a short FAO and IPC introduction for new members benefit
- Break down the large Genetics Working Group into technical groupings
- Involve Working Party Chairs in selection of papers and posters
- Have Working Party Chairs meeting after Business Meetings to draw lessons from past activities, and draw up more uniform, synthesized set of recommendations to IPC and FAO – even possibly a single feedback report to Plenary
- Consider a new Working Party on Trees